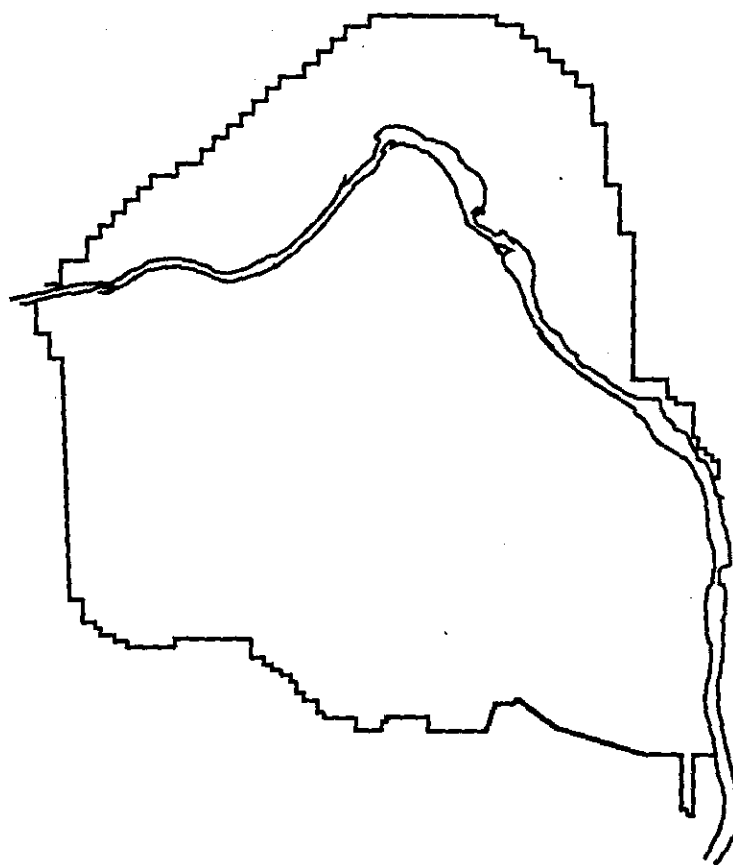


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THE FUTURE FOR HANFORD: USES AND CLEANUP

*The Final Report of the
Hanford Future Site Uses Working Group*



December 1992



Hanford Future Site Uses Working Group

December 22, 1992

Ms. Dana Rasmussen, Administrator
U.S. Environmental Protection Agency
Region 10

Mr. John Wagoner, Manager
U.S. Department of Energy
Richland Field Office

Mr. Fred Olson, Acting Director
Washington Department of Ecology

Dear Ms. Rasmussen, Mr. Wagoner, and Mr. Olson:

On behalf of the Hanford Future Site Uses Working Group, it is my pleasure to present you with the Working Group's final report, "The Future For Hanford: Uses and Cleanup."

As charged, the Working Group has worked diligently and productively through the nine months of its existence to learn about the Hanford Site. On the basis of an understanding of its past and present, they have developed an array of options for ways that different parts of the site could be used in the future. They have also thought through the implications of these future uses for cleanup. The report identifies the cleanup scenarios necessary to enable these future uses to occur and provides major recommendations regarding priorities for cleanup and ways to focus the cleanup most efficiently.

The Working Group was convened in April 1992 by the governmental entities (federal, tribal, state, and local) with important interests in Hanford and its cleanup. The Working Group was comprised of these entities and representatives from constituencies (labor, environmental, agricultural, economic development, cities, and public interest groups) vitally concerned about possible future uses of Hanford and the conduct of cleanup.

The Working Group provided a range of future land use options rather than selecting a single use for specific areas of the site. As such, the Group's efforts represent a major milestone in setting the stage for a more focused debate over Hanford's future. This future can only be assured by a successful cleanup. The report stresses the crucial importance of sharpening the focus on cleanup and describes critical ways this can best be accomplished.

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Hanford Future Site Uses Working Group

Ms. Rasmussen, Mr. Wagoner, and Mr. Olson
December 22, 1992
Page 2

We urge all decision-makers who will be instrumental in determining Hanford's future to study the report carefully and, perhaps of greater importance, to continue to involve the public in the deliberations about this future. Hanford has been, and will continue to be, a crucial component of the Pacific Northwest and a national asset of immeasurable benefit. By working together to shape how Hanford's contribution can continue, we increase the likelihood that cleanup will proceed forcefully over the coming decades and that beneficial future uses of the site will indeed become a reality.

The Working Group expects this report to be entered into the official scoping record for the Hanford Remedial Action Environmental Impact Statement and is confident that the array of future uses and cleanup scenarios it developed will be valuable to those whose task it is to determine how best to clean up Hanford.

Working Group members also believe that the process through which they have arrived at their results, in itself, has been highly beneficial. People from many different perspectives have worked cooperatively among themselves and with the regulating agencies in an atmosphere of mutual respect, to chart possibilities for Hanford's future. They urge the organizing governments to consider this process as a model for future deliberations.

I personally want to commend the Working Group's members for their impressive dedication to our charge. We have all completed our efforts with a heightened sense of the work which remains to be done and a renewed sense of dedication to helping in any way we can accomplish it. We appreciate the opportunity to make this important contribution to Hanford's future and are truly grateful for the support and interest we received from the sponsoring entities. We look forward to seeing how this product is integrated into the ongoing mission at Hanford and hope that it will be as useful to decision-makers as we believe it can be.

Sincerely,



Marshall E. Drummond
Chair, Hanford Future Site Uses Working Group
President, Eastern Washington University

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- F. DOE Proposed Future Land Uses (Beyond 2018)
- G. List of Sources of Information Submitted To The Working Group For Consideration
- H. Summary of Written Comments from Open Houses Sponsored by the Working Group, November 2 - 17, 1992

- ACKNOWLEDGMENTS -

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 Council

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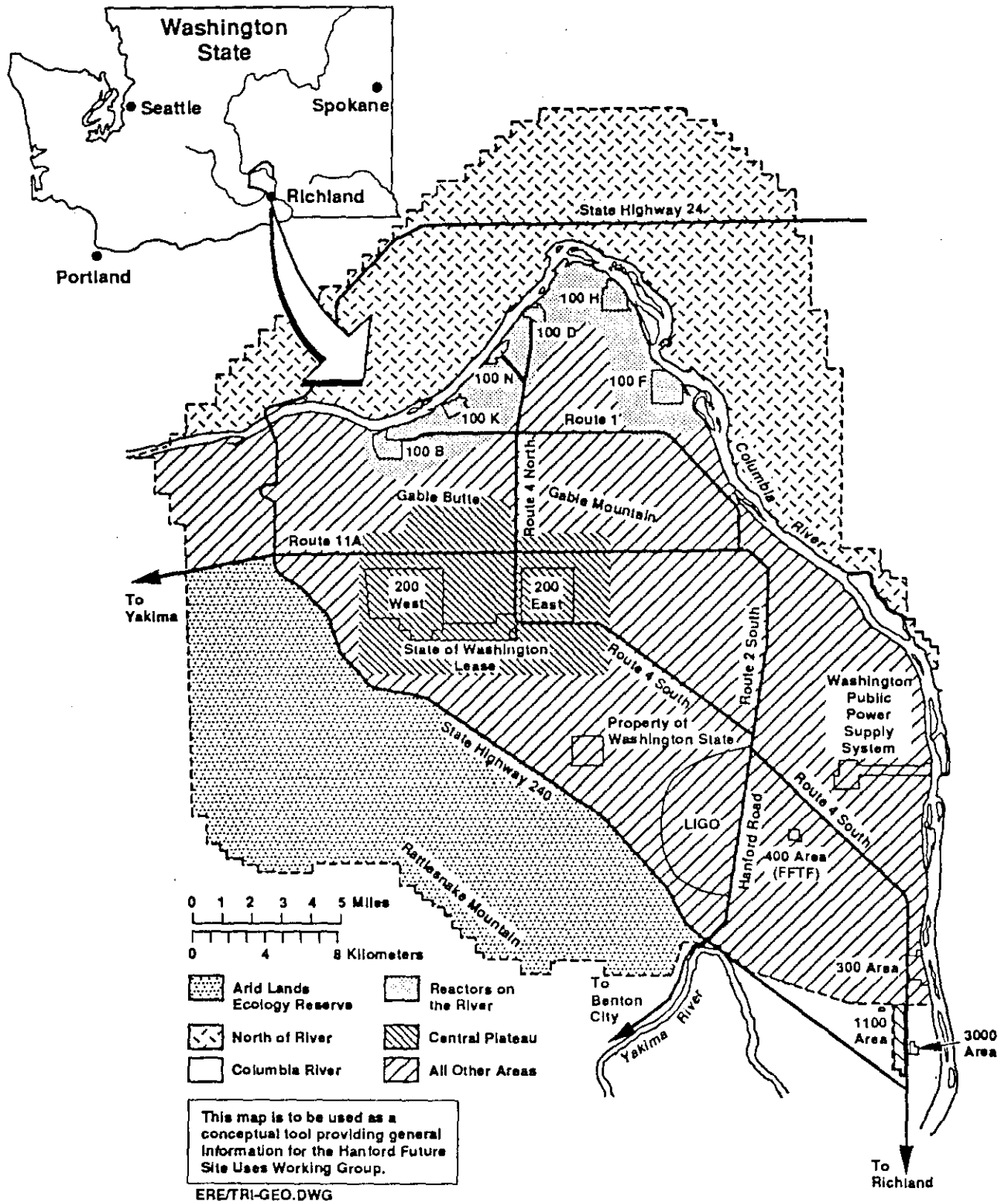
Thanks go to Jeff Ammerman, Mary Auckland, John Bourgeault, and Lois Thiede of Westinghouse-Hanford Company and to Frank Rogers of Boeing Audio-Visual Services whose individual efforts at numerous points helped to make the entire project run more smoothly and produced a final product that exceeded the expectations of all participants.

A special word of thanks goes to Theresa Bergman, Principal Engineer for Westinghouse-Hanford Company, whose dedication to this project was exceptional. Her contributions to the success of the project are too numerous to list.

The process was facilitated and staffed by Triangle Associates, Inc. in association with Ross & Associates Environmental Consulting, Ltd. The project team included Project Manager Alice Shorett and facilitation team members Martha Bean, Vicki King, Bill Ross and Jerry Boese. The team was supported by Laura Washabaugh, Jill Diesel, Suzy Schwarzlander, Amy Squires and Leonard Jones.

Six Geographic Study Areas Map

Hanford Future Site Uses Working Group



GUIDE TO THIS REPORT

The Hanford Future Site Uses Working Group was convened in April, 1992 and met nine times through December, 1992. The Working Group was organized by federal, tribal, state and local governments with jurisdictional interests in Hanford. The Group had broad representation from those interests and from agriculture, labor, local cities, environmental and public interest groups. This Group was charged with the task of articulating a range of visions for the future use of the Hanford site, discussing the implications of those visions on cleanup, and probing for commonalities and convergences within the participants' visions as they applied to cleanup scenarios and priorities. This report presents the results of the Group's nine-months of work.

This Report is organized as follows:

- Chapter 1 provides a summary of the Working Group's major findings and recommendations about Hanford.
- Chapter 2 focuses on the six geographic areas into which the Working Group divided Hanford's 560 square miles to facilitate their deliberations:
 - Arid Lands Ecology Reserve
 - North of the River
 - Columbia River
 - Reactors on the River (100 Area - National Priorities List or NPL Site), containing nine nuclear reactors
 - Central Plateau (200 Area), containing the nuclear fuel processing facilities
 - All Other Areas, including the industrial facilities in the southeast corner of the site and the Washington Public Power Supply System (WPPSS) facilities

In Chapter 2, brief descriptions and factual information as well as Working Group "findings and recommendations" for each area are followed by the proposed future use options and the cleanup scenarios that would permit those future use options to occur. The cleanup scenarios are described in terms of the levels of access, based on contamination, for each area of the site. The terms used were "unrestricted," "restricted," "exclusive," and "buffer." (Please see Chapter 2, page 17, for working definitions used by the Group.)

- Chapter 3 describes the process by which the Working Group was created and accomplished its work. It also describes the nature of support and commitment Working Group members received from the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the States of Washington and Oregon.

GUIDE TO THIS REPORT

- A glossary follows Chapter 3 that defines terms used in the report and briefly describes documents referenced.
- The Appendix contains the Charter and Groundrules that guided the Working Group process; letters of support and commitment from the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the States of Washington and Oregon; a summary of the information presented to the Working Group on topics relevant to future use options and cleanup scenarios; a list of those who provided that information; informational maps used by the Working Group, including maps indicating locations of known contamination on the Hanford site; a map showing DOE future land uses (beyond 2018); a list of specific future land use proposals that were brought before the Group; and a summary of written comments from eight Open Houses sponsored by the Working Group in Washington and Oregon, November 2 - 17, 1992.

PLEASE NOTE:

- Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses.
- The Working Group did not assign priorities to future use options or cleanup scenarios; the order of their presentation in this report has no significance.
- Maps showing the future use options and cleanup scenarios for each geographic area are conceptual in nature. They do not identify specific sites and should not be interpreted as land use maps.
- The future use option maps identify the general kinds of uses that were proposed, and the cleanup scenario maps identify levels of access, based on contamination, needed to make those uses possible.
- Specific future use options proposed for each geographic area may not preclude or exclude other uses from occurring simultaneously in the same geographic area. In some cases, a mix of future use options was identified for an area. Where a mix of use options was proposed, colors reflecting the proposed uses appear as stripes. Exact locations for specific uses were not identified.

CHAPTER 1 OVERVIEW

PURPOSE AND APPROACH OF THE WORKING GROUP

The Hanford Future Site Uses Working Group was convened in April, 1992 by the relevant federal, tribal, state, and local governments with an interest in the cleanup and possible future use of the Hanford site. The Working Group was comprised of these entities and additional representatives from several constituencies with crucial interests in the successful cleanup of Hanford and in the possible future use of the site after cleanup. These constituencies included representatives of labor, environmental, agricultural, economic development, and citizen interest groups.

The Working Group was charged with three related tasks:

- To examine Hanford and identify a range of potential future uses for the site;
- To select appropriate cleanup scenarios necessary to make these future uses possible in light of potential exposure to contamination, if any, after cleanup; and
- To probe for convergences among the Group's cleanup scenarios for any priorities or criteria which could prove useful in focusing or conducting the cleanup of Hanford.

The process by which the Working Group was convened and conducted its deliberations is described more fully in Chapter 3. In brief, the Working Group was guided by a Charter and Groundrules that identified their task and how they would work together. (See Appendix A.) The Group agreed to a process that began with developing a common base of information on issues relevant to the Group's charge. This common base of information then served as the foundation for envisioning future use options and identifying cleanup scenarios needed to make those future use options possible. To facilitate their deliberations about Hanford's 560 square miles, Working Group members divided the site into six geographic areas. They then developed future use options and cleanup scenarios as well as "findings and recommendations" for each of the areas. These are presented in Chapter 2.

The Working Group's efforts were predicated on the belief that the Hanford cleanup would be well served by having a better understanding of the range of possible future uses to which the site might be devoted *after* cleanup was completed. While the principal goal of cleanup is to protect human health and safety, the possible future uses of the site can provide critical direction to the cleanup as well. An understanding of possible future uses can focus the efforts of both the U.S. Department of Energy (DOE) and the state and federal regulators, as well as the Congress and the public, on what manner of cleanup is needed, and what is most important to accomplish over time as Hanford's lengthy cleanup unfolds. The fact that DOE is in the midst of developing the Hanford Remedial Action Environmental Impact Statement

CHAPTER 1 Overview

(HRA EIS), which will chart the course for some, but not all, of the Hanford cleanup, was a prime contributing factor for convening the Working Group. DOE, the State of Washington, and the U.S. Environmental Protection Agency (EPA) have committed to using the Working Group's products to inform and guide them in all relevant aspects of their cleanup decisions.

The Working Group has now completed its work. It has identified a range of possible future uses for each major geographic area of the Hanford site. These future uses are described in generic terms, such as agriculture, industry, wildlife, etc., rather than precise articulations of specific activities such as cherry orchards, laboratories, elk herds, etc. The Working Group has thought through the levels of access needed to permit these uses to occur and has selected appropriate cleanup scenarios that identify those levels of access. These levels of access include "unrestricted" use, "restricted" use, "exclusive" use for hazardous and nuclear waste/materials activities, and "buffer," the area that surrounds an "exclusive" area. It is important to note that the Working Group has developed fewer cleanup scenarios for each area than future use options. This is because a particular cleanup scenario (e.g., "unrestricted" use) often suffices for several future use options (e.g., wildlife, agriculture, Native American uses). (See the Table on page 16 for a summary of the number of future use options and cleanup scenarios developed for each geographic area.)

The Working Group's product is the result of the active participation of each constituency group; indeed, it is the extensive and impressive nature of this participation that is one of the greatest strengths of the Working Group's effort. The Group had a groundrule that a future use option would be included if it was advocated by any one member of the Working Group. This groundrule ensured that the range of uses would be relatively broad but still reflect some winnowing of uses that did not have at least one "champion" in the group. However, inclusion of a use does not mean that the Working Group *as a whole* endorses that specific use.*

Thus, this report is the result of the Working Group's efforts as a whole, yet it does not represent the traditional notion of consensus or support by each member for each future use in the report. The Working Group's report is *not* a land use report *per se*. The Working Group did not intend to specify and delineate the exact future uses which would occur throughout the site. To have done so would have meant addressing the issue of future site management and/or ownership which was beyond the scope of the Working Group's Charter.

Therefore, this report should be viewed as a vision of possible future uses and an examination of what the cleanup needs to accomplish in order to make those uses possible.*

* If a future use encompasses or resembles any specific commercial venture planned or announced for the Hanford site or the Columbia River, this should not be construed *in any way* as an endorsement by the Working Group of that venture.

* The Working Group's effort is the first crucial step to enable discussions regarding future land ownership/management to occur in a coherent manner.

FINDINGS

After examining Hanford in this manner and considering the information shared by the Group, seven findings were agreed to by the Working Group. These findings represent the collective views of the Group regarding Hanford and its cleanup. They form the bedrock of the Group's site-wide recommendations and the findings and recommendations the Group developed for each geographic area.

Hanford Is Important.

The first finding concerns the critical importance of the Hanford site. The site has had significant international and national importance over the last 50 years as well as a direct influence on the lives of the people living and working in the general proximity of the site and on the people of the entire Pacific Northwest. The importance which Hanford has had in the past, is having in the present, and will have in the future can hardly be overemphasized. Hanford was a crucial component of the nation's nuclear weapons complex, has sponsored important scientific research, and influenced the economy of an entire region. The greater Tri-Cities regional economy (Kennewick, Pasco and Richland) is still largely driven by Hanford's activities. Prior to this, Native Americans lived at the site for countless generations and had a flourishing subsistence economy there. The necessity of placing vast tracts of land off-limits for security reasons for almost five decades has resulted in the preservation of wildlife and ecological values no longer widely available in much of the rest of the surrounding flourishing agricultural area.

The risks posed by the existing contamination from the past nuclear weapons activity is now driving a vast cleanup effort and is mobilizing citizen support for the cleanup. This cleanup can and should continue Hanford's international and national contributions as well as prepare the site for future productive uses. DOE has identified Hanford as the flagship for its environmental restoration efforts. As noted above, new technologies will be tested and developed at and for Hanford which can have benefit worldwide at other sites needing similar assistance. The spinoffs resulting from this research and development at Hanford can have the additional, crucial benefit of contributing to the economic transition for the greater Tri-Cities area from the dominance of DOE-funded activities to those that are more privately-sponsored.

The array of future use options developed by the Working Group also underscores the importance Hanford can play in the future after appropriate cleanup is completed. The Working Group's range of plausible future use options includes: agriculture; industrial and commercial development; wildlife and habitat preserves; environmental restoration and waste management activities; public access and recreation; and Native American uses such as hunting, gathering, and religious practices.

Cleanup Is Now DOE's Primary Mission at Hanford.

As this future for Hanford unfolds, the realities of the new mission for DOE at the Hanford site stand out. DOE now seeks to implement its new mission of initiating and completing the environmental restoration of the Hanford site. This change of mission has been profound and poses new challenges for DOE Richland in the conduct of its business, in its involvement with the public, and in accountability for its actions. DOE is in the process of developing these new ways of working. Communication with regulators and with affected and interested constituencies is a new reality for DOE, and the success of the cleanup will depend greatly on the quality of these interactions. The creation of the Working Group is an example of how things have changed. How the Department of Energy uses and responds to the Working Group's input is an opportunity for the Department of Energy to further demonstrate such change. The Working Group process has shown the participants that properly constructed and conducted dialogue with DOE - and with each other - can help support this new mission of cleanup. Such mutual support is necessary not only to ensure the success of cleanup but also to help develop the right climate for selecting future use opportunities and developing new industries locally as a spinoff of emerging cleanup technologies.

The Working Group's efforts strongly affirm the necessity of getting on with cleanup. The Group also affirms the necessity of the region's interested parties working together to promote the importance of cleanup and to maximize Hanford's potential.

The Hanford Site Will Change as Cleanup Proceeds.

As a result of the change of mission for DOE, and if cleanup is successfully conducted, the part of the Hanford site controlled by the Department of Energy (DOE) will inevitably grow smaller over time. The Working Group makes no predictions regarding to whom, by what time, or to what extent land might be transferred, sold or disposed. However, DOE-Richland officials have stated to the Working Group their intent that portions of the site be declared excess to the mission of the site, once land has received the appropriate level of cleanup and is not needed for further conduct of the cleanup or for other DOE-related activities. DOE's desire to relinquish control of parts of the site over time again reinforces the importance of the Working Group's efforts to identify a range of possible future uses and any cleanup priorities to assist and, if possible, expedite DOE's stated objective.

At present, there is no clearly understood process for DOE to carry out the objective of relinquishing ownership and control of part of the site. The Working Group is aware of the basics of the General Services Administration's process for transferring excess property to other government agencies or disposing of surplus government property. Whether or not Congressional action is needed to ultimately resolve these issues, there will be lengthy and complicated processes to change land ownership from DOE administration to other entities. Former Bureau of Land Management and Bureau of Reclamation lands may be returned to the public domain with the end of the Atomic Energy Act mission. Treaty rights and environmental laws have implications for use of public domain and lands otherwise

transferred. Implications of those rights and laws should be evaluated. DOE needs to develop processes to inform the public both of the decisions to declare lands excess *and* of its decisions to support or sponsor non cleanup-related development on currently undeveloped lands.

The array of future use options identified by the Working Group suggests that discussions over future site use, ownership, or management could be lengthy and spirited. DOE's actions to develop the site for non-cleanup related development could support *or* thwart community desires for future land use, depending on what new activity is proposed. It is incumbent upon DOE to initiate public involvement in these crucial decisions in an atmosphere of consultation and full disclosure. Failure to do so could set up a "land rush" mentality and detract from the main goal of site cleanup.

Both Cleanup and Future Land Uses Face Significant Constraints.

For purposes of providing a range of potential future use options, alternatives described in this report assume few constraints other than time and technical limitations associated with the cleanup. However, the Working Group recognizes that the volume and variety of contaminants and the potential risks associated with some of them create difficulties as does the current state of technologies to address some types of contamination.

The Working Group also recognizes that conversion of Hanford land to alternate uses will be affected by numerous other constraints. A sustained cleanup will require significant federal funds, year after year, which can only result from Congressional action, year after year. Ensuring this consistent financial support for the cleanup at Hanford will be a formidable challenge. The cleanup mission itself will require the construction of large industrial facilities on the site. Other programmatic commitments not related to cleanup have already been made by DOE that are expected to tie up large portions of Hanford for many years to come. In addition, Hanford may be called upon in the future to house programs sponsored by federal agencies other than DOE.

The fate of the cleanup and ultimate disposal of surplus property will also be affected by and must be in compliance with state and federal laws. Transfer of land from DOE to other parties may be limited by current restrictive procedures and laws, requiring new legislation to be adopted. Any use of Hanford land by the private sector will fall under local and state development laws. Readers are advised to be aware of such restrictions in evaluating land use options summarized in this report. These potential obstacles again emphasize the necessity of continued collective support for cleanup and continued dialogue on specific future use possibilities.

Native American Treaty Rights Exist.

The treaty rights of Native Americans were brought before the Working Group and are

worthy of particular note. The Native American tribes who inhabited the area encompassing the Hanford site prior to the arrival of the European settlers signed treaties in 1855, ceding certain lands to the United States government in exchange for settlement on reservation lands. Separate treaties were signed in 1855 between Governor Stevens, on behalf of the United States, and the Yakima Indian Nation; the Nez Perce Tribe; and the Umatilla, Cayuse and Walla Walla tribes. These treaties reserved specific rights to the tribes, including those related to hunting, fishing, gathering foods and medicines, and pasturing livestock on the open and unclaimed portions of those ceded lands, in common with citizens. Because of the federal government's control of Hanford for national security reasons, the tribes have had limited access to the site since 1943. Ironically, this control has also resulted in the preservation at Hanford of archaeological, spiritual and burial sites, and cultural resources that may not have occurred elsewhere. Access to and protection of these sites and resources are important. In addition, plants traditionally used by Native Americans for foods and medicines still grow on the Hanford site, while, in many other parts of eastern Washington, they have been supplanted by agricultural crops.

The entire Hanford site is within the boundaries of the lands ceded by the tribes. The Group did not draw conclusions on the precise legal implications of the treaties of 1855. The Group does acknowledge those treaty rights and believes that these rights accompany all of the findings of the Working Group and that they will have bearing on the actual future use after cleanup and/or declaration of excess land by DOE. Additionally, specific future use options relating to Native American uses have been identified in this report in several geographic areas.

Uncertainty and Risk Surround the Cleanup.

The Working Group was confronted by the fact that current information about the extent of contamination at the site is incomplete and that some of the technologies that will be employed to conduct the cleanup are still being developed. This lack of knowledge affects the ability to describe possible future uses. The interaction of changing or emerging technologies which will produce specific environmental results during cleanup and the changing land uses of the Hanford site over time will be a fluid and dynamic process. The cleanup process *and* the land use process will need to accommodate changes in cleanup that become feasible (in terms of technology) or necessary (in terms of enabling desired land uses to occur).

This lack of knowledge also exacerbates the sense of risk associated with the cleanup, especially in the Central Plateau where the majority of the contamination resides. Unplanned and unanticipated threats may exist throughout the full range of Hanford waste management and environmental restoration activities. These threats will need to be factored in at the time of specific land use decisions to determine whether or not the risks are acceptable.

The Working Group had limited discussions concerning the health and environmental effects of hazardous or radioactive contamination and drew no conclusions in regards to what level of cleanup is safe for human use. Significant uncertainty and debate exist about the health

and environmental effects from exposure to various contaminants. To determine "how clean is clean" for an area to enable any human uses, public discussion must take into account the debate that exists in the scientific community on the effects of these exposures.

Time is a Critical Element in Focusing the Cleanup.

When considering the scope and pace of Hanford's cleanup, especially in light of the complexity of the technical issues associated with it, the question of time - or when an activity can be expected to start or end - deserves significant attention. The Working Group was aware of the time frame in the Tri-Party Agreement which covers the initiation and/or completion of a set of important cleanup decision and actions between 1989 and 2018. The Working Group divided its findings regarding time into three basic categories: immediately; as soon as possible (up to 2018); and in the foreseeable future (after 2018). Generally, this division implied either a sense of urgency or a recognition that some activities may take a considerable length of time to complete or may be a lower priority, compared to other cleanup activities.

The Working Group believes that considerable attention must be paid in the future to the issue of timing. Given the long time horizon of the cleanup and the long life span of the contaminants, a critical question for future land use is when various cleanup objectives will eventually be achieved. Ultimately, the Working Group desires to see that all of Hanford would be clean enough for future uses other than waste management. The Working Group understands that for some contamination, for example, that in the Central Plateau, new technology needs to be developed over the life of the cleanup to accomplish the cleanup. The Working Group desires that such general usage of the site be available in the horizon of 100 years from the decommissioning of waste management facilities and the closure of waste disposal areas. The Working Group acknowledges that this desire is tempered by a recognition that technological constraints may be discovered over the life of the cleanup but urges that every effort be made to overcome these hurdles and accomplish this ultimate cleanup goal.

RECOMMENDATIONS

Nine major recommendations applicable to the Hanford cleanup as a whole emerged from the Working Group. These recommendations serve as a base for consideration of the specific findings and recommendations associated with each geographic area in Chapter 2.

Protect the Columbia River.

The Columbia River is a vital resource in the Pacific Northwest. As one of the largest rivers in North America, it is an international asset whose waters support uses that are immensely valuable to the economic and environmental well-being of the region. These uses include

irrigating crops, generating hydroelectric power, providing outdoor recreation, serving as a water-borne transportation route, supplying drinking water, and nurturing native plants, fish and wildlife, particularly threatened and endangered species.

Several contaminated groundwater plumes from throughout the site connect with the River as it traverses the site and cause various degrees of concern for human and ecological safety. At some locations high levels of contaminants are known to be entering the River. This causes concern because of the downstream uses of the River for drinking water for several communities in Oregon and Washington and for fish and wildlife, recreational, and agricultural uses dependent upon high quality water. Many of the Working Group's cleanup priorities address stopping the actual and possible future contamination of the Columbia. Protection of the Columbia and all of its uses is viewed as a high priority.

Deal Realistically and Forcefully with Groundwater Contamination.

There is a large volume of groundwater contaminated with a wide variety of contaminants at the Hanford site. Besides representing a current and future threat to the River, the presence of contaminated groundwater poses significant issues for possible future land use. Because some of the contaminated groundwater is now reaching the River, and because contaminants are continuing to move through the vadose zone to the groundwater, the Working Group recommends the following restrictions on the use of groundwater:

- No use of the contaminated groundwater should occur if it would jeopardize public health and safety;
- No use of surface or groundwater, whether contaminated or not, should occur if this usage would adversely change hydrologic conditions, increase the spread of contaminated plumes, or increase the speed of contaminated groundwater flow to the Columbia River.

The Working Group identified those areas where groundwater should be returned to "unrestricted" status as soon as possible; it left the rest of the groundwater "restricted" for the foreseeable future. However, as technology advances, and over time, the Working Group expects groundwater to ultimately be returned to "unrestricted" status.

The Working Group recommends implementation of a combination of strategies to deal with contaminated groundwater:

- Removing the source of the potential contaminants prior to reaching groundwater;
- Reducing and eliminating as soon as possible discharges into the soil to minimize further groundwater contamination and to slow the speed of contaminant movement toward the Columbia River, and
- Treating the contaminated groundwater itself.

The choice of strategy would vary due to the nature of the contaminant, technical feasibility, and threat to human or ecological health. In some instances, dealing with contaminated groundwater is an important issue immediately, such as where high levels of contaminants are known to be entering the River. In other cases, due to existing conditions and lack of current technical capabilities, it may be a low priority until aggressive research develops new capabilities. An example of the latter is some types of contamination under the Central Plateau, which are not moving rapidly to the River.

Use the Central Plateau Wisely for Waste Management.

The presence of many different types of radionuclides and hazardous constituents in various volumes, forms and combinations throughout the site poses a key challenge to the Hanford cleanup. To facilitate cleanup of the rest of the site, wastes from throughout the Hanford site should be concentrated in the Central Plateau. At present, the wastes are concentrated in three primary areas: the corridor south of the River containing the reactors; the southeast corner of the site containing fuel fabrication and other facilities; and the Central Plateau, which contains over eighty per cent of the known radionuclides on site. Thus, wastes would be moving into the Central Plateau from across the site. Waste storage, treatment, and disposal activities in the Central Plateau should be concentrated within this area as well, whenever feasible, to minimize the amount of land devoted to, or contaminated by, waste management activities. This principle of minimizing land used for waste management should specifically be considered in imminent near-term decisions about utilizing additional uncontaminated Central Plateau lands for permanent disposal of grout.

Waste generated in or coming to the Central Plateau would not necessarily be permanently disposed of in the Central Plateau. Off-site shipments are occurring now and might continue for some wastes. Also, new technologies may be applied to these wastes in the foreseeable future. Considering the amount of waste that must be dealt with, its long life span, and the anticipated length of time that the cleanup will take, the Working Group assumed that some type of government presence or oversight will be necessary for the foreseeable future due to the anticipated level of residual contamination in the Central Plateau. The Central Plateau would be an "exclusive" area, surrounded by a "buffer" zone of sufficient size to reduce exposure to risks emanating from the waste management activities occurring there. Access would be limited to personnel who were properly trained and monitored for working with radioactive or hazardous wastes or materials. Following completion of waste management activities, the Working Group desires that the Central Plateau be suitable for other general uses 100 years from decommissioning of waste management facilities and closure of waste disposal areas.

A crucial question for the future of the Hanford site is whether waste importation (other than where current commitments exist) should occur, and if so, what type of wastes should be allowed to be imported for treatment, storage or disposal. The Working Group has arrayed a range of possible waste management importation options and believes that serious reflection

and dialogue with the affected governments, constituents, and the public is required before the selection of any of these options.

Do No Harm During Cleanup or with New Development.

The primary goal of cleanup is to protect human health and public safety. In addition, environmental values of the site are to be protected and restored. As a result, decisions made both in the course of cleanup and in the possible development of the site for new activities should support these overall goals. In other words, all such decisions should result in decreased risks to public health and net benefits to the environment.* The Working Group believes that both cleanup and future development decisions should be guided by the principle, "do no harm." This is especially important in light of the existing wildlife and plant life at the Hanford site. Home for many plants and animals, including threatened and endangered species, Hanford represents important habitat that should be protected as cleanup and new development proceeds. This means that cleanup and future development should be conducted to minimize impacts on plants and animals. For example, waste streams resulting from cleanup or development activities should not further contaminate, speed the movement of existing contamination, or otherwise hinder cleanup efforts. Wise application of this principle is more likely to result in effective cleanup over time as well as sound, long-term development of the site.

Cleanup of Areas of High Future Use Value is Important.

The Working Group became familiar with the criteria currently in use by DOE and the regulatory agencies (Washington Department of Ecology and EPA) for selecting cleanup priorities. These criteria appropriately emphasize such things as current threats to public health or the environment, risk of catastrophic exposure, and technical feasibility. While agreeing with these criteria, the Working Group also believes that areas of high future use value should be candidates for priority cleanup action. The addition of future use value as a cleanup priority need not conflict with, and may complement, risk-based criteria.

The Working Group identified two types of areas of high future use value. First are those that could contribute to the productive development or use of the site for other purposes. These areas include the corridor along the Columbia River (important for public recreation and Native American uses) and the southeast corner of the site (important for its economic development potential). These areas are already high priority cleanup areas based on the Tri-Party agreement criteria. Second are those areas which, for a very small percentage of the cleanup budget and in a short time frame, could be cleaned up, making large tracts of land

* The Working Group acknowledges that there are two on-going activities which may conflict with these goals, at least in relation to Hanford's environment. These are the use of Hanford as the commercial Low Level Waste facility for the Northwest Compact States and the use of Hanford for the disposal of deactivated nuclear submarine reactor compartments. As such, this section should be read to refer to future decisions.

available for other uses or declaration of excess by DOE. These areas include North of the River, the Arid Lands Ecology Reserve, and the western and northwestern portions of All Other Areas.

Clean Up to the Level Necessary to Enable the Future Use Option to Occur.

The Working Group addressed the question of "how clean is clean enough" in the following manner. In developing cleanup scenarios for the various future use options, the Group specified the relevant level of access ("unrestricted," "restricted," or "exclusive") to be achieved by the cleanup. In those geographic areas where the presence of some residual contamination could still enable a particular future use option to occur, the Working Group selected the "restricted" category and described what restrictions were applicable for that use. Examples include "clean enough for industry" in a part of the southeast corner of the site and the mid-section of All Other Areas, and "clean enough for wildlife" in All Other Areas. Additionally, the Working Group modified an "unrestricted" cleanup scenario for some geographic areas if a cleanup to "unrestricted" status might adversely affect the future use option being proposed. Examples include remediating sediments in the Columbia River to "unrestricted" unless the cleanup would do more harm than good to the River as a whole.

It is important to note that an "unrestricted" status would, by and large, enable *all* future use options to occur, unless, of course, the cleanup to "unrestricted" would indeed harm a particular use; for example, wildlife habitat could be destroyed by digging up contaminated soils. However, the Working Group did not believe that all uses *needed* an "unrestricted" status to be feasible and hence developed the sense that the cleanup should go to the level necessary for the use in mind.

Transport Waste Safely and Be Prepared.

The Working Group recognized that decisions related to the Hanford site cleanup effort will have a direct impact on the transportation of radioactive and hazardous materials within, and to and from, the Hanford site, including frequency of such shipments.

The Working Group believes that the shipment of radioactive and hazardous materials requires close cooperation between DOE and the Native American tribes, states, and local communities through whose jurisdictions the shipments will travel. Not only are transportation routing issues important to those living near the Hanford site, but emergency preparedness and response capability are of crucial importance, as well. Congress recognized the importance of ensuring safe transportation to support the cleanup effort in two different bills passed in 1992 which address the following issues:

- Accident prevention measures such as advance notification of shipments by DOE to Native American tribes, states, and local governments;
- Agreement on timing and routing of shipments to avoid adverse weather and road conditions;

- Qualification of shipping company personnel;
- Safe parking locations; and
- Emergency response measures such as providing emergency equipment and training and other assistance to tribal, state, and local emergency responders.

Specifically, the Working Group endorses the Hazardous Materials Management Emergency Response Training Center (HAMMER). The Working Group also endorses the above transportation safety measures and encourages DOE to implement these measures quickly and to work with the tribes, states and local communities to establish an effective, ongoing, safe transportation program.

The transportation-related activities associated with cleanup -- in light of both on-site and off-site movement of waste -- will also pose challenges for and/or conflicts with other land use activities or possibilities. Decisions will need to be made on a case-by-case basis and should reflect the safety and proper conduct of waste movement and management as a top priority.

Capture Economic Development Opportunities Locally.

DOE has announced its intention to leave Hanford after completing its cleanup mission. Whether this occurs within the 30 years anticipated in the Tri-Party Agreement or takes considerably longer, the Hanford portion of the region's economic base must ultimately be replaced by non-DOE activities. Currently, one out of four jobs in the region is directly tied to Hanford programs. Over 16,500 are now employed by DOE and its Hanford contractors. This number is expected to increase in the near term as a result of cleanup and related construction work. For the private sector to step in and employ a highly skilled, well-paid work force of this size within a decade or two will be a major challenge. The Working Group urges DOE and its contractors to help the tribes, the state and local communities create the potential for meaningful economic development during the cleanup, both on- and off-site. Research and development necessary for cleanup should occur in a manner that creates additional private sector economic development opportunities. All parties must share a sense of urgency in seizing opportunities to build a stable and diversified local economy. In so doing, the Working Group recognizes the economic benefits associated with viable populations of native rare, threatened or endangered species on the site to avoid precipitous disruption of other economic activity.

Involve the Public in Future Decisions about Hanford.

Public involvement should continue to be incorporated into future decision-making at Hanford. The Working Group process is an example of the type of involvement in decision-making that should be a model. Types of decisions that should be made with public consultation include those involving transportation and emergency preparedness, economic development, decisions by DOE to reserve parts of the site for other missions, use of groundwater, and the exposure to risk resulting from land use decisions.

These findings and recommendations provide the context for the Group's geographic area findings and recommendations, future use options, and cleanup scenarios that follow in Chapter 2.

CHAPTER 2

Geographic Area Future Use Options and Cleanup Scenarios

INTRODUCTION

To facilitate study and consideration of future use options and their implications for the cleanup of the Hanford site, members of the Working Group divided Hanford's 560 square miles into six distinct geographic areas. For each geographic area, the Working Group considered its natural features, cultural aspects, current and past land uses, economic considerations and contributions, and the extent and location of known contamination. Based on these considerations as well as on their individual perspectives, Working Group members then identified future use options for each area and thought through the degree of cleanup needed to permit each potential future use to occur. This work was accomplished both in plenary and in small group sessions.

The following table indicates the number of future use options and cleanup scenarios that were identified for each of the six geographic areas on the site. However, it is important to recognize that many potential future uses are possible within each cleanup scenario.

Geographic Area	Number of Potential Future Use Options	Number of Cleanup Scenarios
Arid Land Ecology Reserve	5	1
North of the River	3	1
Reactors on the River (100 Area - NPL Site)	4	3
Columbia River	3	1
Central Plateau	6	1
All Other Areas	4	2

All of the future use options and cleanup scenarios were considered plausible or possible and were advocated by at least one member of the Working Group. The Working Group was in agreement that the future use ideas and cleanup scenarios presented here should be analyzed

in any future environmental assessments regarding actions and activities at the Hanford site. At the same time, the Working Group wished to be clear that it does not have a consensus about which cleanup scenarios should be implemented at the site, nor about which potential future uses should follow from each cleanup scenario.

WORKING DEFINITIONS

The Working Group established the following working definitions to guide and clarify their work:

Environmental restoration:

Cleanup and restoration of sites contaminated with radioactive and/or hazardous substances during past production or disposal activities.

Waste management:

Cleanup activities involving the short-term or long-term storage and isolation of existing or newly generated wastes, treatment and final disposal of wastes.

Geographic Area:

An area within the Hanford site that can be thought of as a unit because of similarities in current use, historic use, or topographic continuity.

Future Use Option:

A generic proposal for how an area of the site might be used in the future. The viability of future use options depends upon specific levels of access (see below) which have implications for the degree of cleanup. The sequence of future use options in this report does not imply priorities.

Cleanup Scenario:

A description for a geographic area that identifies distinct levels of "access," based on the presence of contamination, to the surface, the subsurface and the groundwater needed to allow future use options to occur. (It is important to note that the maps in this report refer only to the surface; the accompanying narratives identify the access assumed for the subsurface and the groundwater.) These *levels of access* are:

Unrestricted means that contamination does not preclude any human uses. However, there may be other reasons to control or limit certain uses or activities, for example, limiting access to preserve cultural features and wildlife/natural values. Where appropriate, this latter understanding is reflected in the "findings."

Restricted means that there are limits on the use because of contamination. It can apply to the surface, subsurface or groundwater. "Restricted" may be applied to groundwater as an interim designation with the expectation that groundwater would ultimately be cleaned up to "unrestricted" status.

Exclusive refers to an area where access would be limited, because of risk, to personnel who were properly trained and monitored for working with radioactive or hazardous wastes and materials.

Buffer refers to a part of the site that surrounds an "exclusive" area; it is treated like an "exclusive" area because of risk emanating from the "exclusive" area it abuts. Environmental restoration activities can occur in buffers, but waste management activities would not. A buffer area is not expected to remain a buffer area forever.

Each level of access, based on contamination, enables an array of potential future site uses. For instance, an "unrestricted" area within the Hanford site could conceivably support residential uses, agricultural uses, industry or wildlife. Similarly, an area "restricted" on the surface, subsurface or groundwater could enable some industrial uses. An area with "restricted" groundwater could enable a wildlife refuge.

Timing and Priorities:

The Working Group divided their findings relative to the timing and priorities for the cleanup scenarios into three basic categories:

Immediately: This category was applied to cleanup scenarios in areas where contamination appeared to pose an immediate threat to public health and safety. It was also applied to large areas which could either be cleaned up quickly and relatively inexpensively or to areas that were highly desirable for development to benefit the local community.

As soon as possible (up to 2018): This category was the next level down in importance. It applied to areas where the risk of exposure was not immediate, to areas where the cleanup was expected to take some time to accomplish, or to areas where the cleanup was considered relatively less important than in other areas.

In the foreseeable future: This category was applied to areas where the cleanup was expected to take a considerable length of time to complete or to areas where the cleanup was relatively lower on the Group's scale of what was most important to accomplish first. In this regard, this category includes the long-term view and horizon that general usage of the site be available 100 years from the decommissioning of waste management facilities and the closure of waste disposal areas.

GUIDE TO GEOGRAPHIC AREA SECTIONS

Information for each geographic area is presented in the following order:

- **Brief description** of the geographic area
- **Informational points** about the natural features, cultural aspects, land uses, economic considerations and contributions, contamination and decisions related to the areas
- **Findings and recommendations** from the Working Group about each area
- **The array of future use options** with associated maps, not in priority order
- **Cleanup scenarios** with associated maps, not in priority order
- A discussion of the relative "**timing and importance**" of each cleanup scenario

Notes About These Products

The information contained in the **descriptions** and the **information points** in each geographic area report was gathered from a variety of sources. These sources include official documents, such as draft or final environmental impact statements, management plans, or other government publications. Information about features of the areas was also obtained from Working Group members with special expertise or knowledge of these features, from representatives of DOE, EPA and Ecology who deal specifically with the Hanford site, and from representatives of government contractors who work on the site. While not exhaustive, the descriptions and information points that follow summarize the significant features and aspects which make each geographic area distinct.

Future use options were included if they were advocated by any one member of the Working Group and should not be considered to be recommendations of the Working Group for future site uses.

In each case, the future use option maps are followed by the appropriate cleanup scenario maps. The future use options and cleanup scenarios are not in priority order.

Maps showing the future use options and cleanup scenarios for each geographic area are conceptual in nature. The colors on the maps indicate which kinds of activities were identified by various Working Group members for each of the geographic areas. The maps do not identify specific sites and should not be interpreted as land use maps.

The future use option maps identify the general kinds of uses that were proposed and the cleanup scenario maps identify levels of access, based on contamination, needed to make those uses possible.

Specific future use options proposed for each geographic area may not preclude or exclude other uses from occurring simultaneously in the same geographic area. In some cases, a mix of future use options was identified for an area. Where a mix of use options was proposed, colors reflecting the proposed uses appear as stripes. Exact locations for specific uses were not identified.

The six **Geographic Areas** are presented in the following order:

- Arid Lands Ecology Reserve
- North of the River
- Columbia River
- Reactors on the River (100 Area - NPL Site)
- Central Plateau (200 Area)
- All Other Areas

Guide to Future Use Option and Cleanup Scenario Maps

The future use option and cleanup scenario maps are presented in the following order:

- Arid Lands Ecology Reserve
- North of the River
- Columbia River
- Reactors on the River (100 Area - NPL Site)
- Central Plateau (200 Area)
- All Other Areas






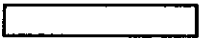


In each case, the future use option maps are followed by the appropriate cleanup scenario maps. The future use options and cleanup scenarios are not in priority order.

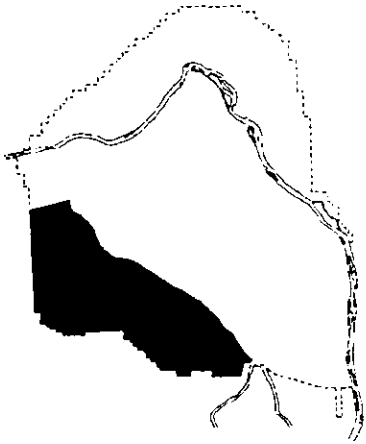
The "color key" below shows the colors that correspond to the proposed future use options for the various areas.

PLEASE NOTE: The maps presented here are not land use maps that identify specific sites. They are conceptual in nature. While many of the uses presented here have the individual endorsement of members of the Working Group, their inclusion does not mean that the Working Group *as a whole* endorses that specific use. Rather, it means that at least one Working Group member advocated its inclusion in the report and for subsequent analysis in the HRA EIS.

For each geographic area, there are at least two different future use options proposed. In several cases, there are up to five. The colors on the maps indicate which kinds of activities were identified by various Working Group members for each of the geographic areas.

Color Key for the Future Use Options:

	Agriculture
	Wildlife
	Native American Uses
	Industry
	Waste Management
	Research/Office
	Recreational/Related Commercial
	Recreation

**ARID LANDS ECOLOGY RESERVE**

Description: The Arid Lands Ecology Reserve (ALE) was established in 1967 and is currently managed by Battelle Pacific Northwest Laboratories for the Department of Energy as a habitat/wildlife reserve and nature research center. It is located south of Highway 240 and west of the point where the Yakima River borders on the Hanford site. ALE Reserve encompasses about 120 square miles (or approximately 77,000 acres) of relatively undisturbed shrub-steppe land typical of historic Eastern Washington, with a complete, functioning ecosystem. The dominant

feature of ALE Reserve is Rattlesnake Ridge which rises approximately 3600 feet above the rest of the Reserve and forms the southwest boundary of the site. An observatory containing some of the nation's first computerized telescopes was built at a former Army missile site on top of the ridge.

Public access to ALE Reserve has been restricted since 1943; as a result, the habitat is virtually undisturbed. In March 1992, DOE and the Nature Conservancy (a private, non-profit conservation group) entered into a cooperative agreement whereby the Nature Conservancy would assist in inventorying plants, animals and ecologically significant areas of the Hanford site, especially relatively undisturbed areas such as ALE Reserve. This work is ongoing and dependent upon Congressional funding separate from cleanup funds. The existing areas of contamination in ALE Reserve are small and do not contain any radioactive contaminants.

Information Points about the ALE Reserve

Natural Features

- Primarily ungrazed shrub-steppe habitat (minor areas grazed in past)
- Groundwater recharge at Cold Creek and Dry Creek
- Endangered and threatened plants and animals, other species thriving
- Elk herd, self-established in 1972

Cultural Aspects

- Native American sites:
Rattlesnake Mountain -- religious site
Traditional hunting & food gathering sites
- Archaeological sites at Rattlesnake Springs and Snively Springs on National Register of Historic Places

CHAPTER 2 Geographic Areas

Land Uses

- Prior to 1940 -- sheep grazing, homesteading, natural gas drilling, food gathering
- Arid Lands Ecology Reserve established in 1967 by Atomic Energy Commission order, managed by Battelle Pacific Northwest Laboratory
- Also designated as "Rattlesnake Hills Research Natural Area" with focus on research and education

Economic Considerations and Contributions

- Arable land
- Mineral rights to approximately 1280 acres owned by Big Bear-Alberta Mining Co.
- Current employment - 25 or less, depending upon the season
- Native plant and animal communities

Contamination

- Rattlesnake Mountain Nike Missile Site
- Septic tank sites

Decisions

- Draft Management Plan -- to be finalized by end of 1992
- Tri-Party Agreement: RCRA permit & Superfund actions
- Superfund Record of Decision for the two contaminated sites is scheduled for summer, 1993, with cleanup to follow shortly thereafter

Findings and Recommendations

There is no known radioactive contamination in the ALE Reserve. There are two contaminated areas, both small in size: a former Nike missile site and a septic system associated with the observatory on Rattlesnake Ridge.

There is a concern about using groundwater beneath ALE Reserve because of a nitrate plume that appears to intrude into the area from the east and the possibility that pumping the groundwater might change flow patterns and spread contamination.

The cleanup of existing contamination can be accomplished quickly, using existing technology and at a cost that is a small percentage of the total cleanup budget.

Future Use Options

Working Group members proposed five general future use options for the ALE Reserve.* They included:

- 1** *Option 1: Agriculture and ALE Reserve*
Flat portions of the ALE Reserve would be used for livestock grazing and irrigated agriculture, such as growing pulp trees. (Irrigation would occur only if it could be done without contributing to groundwater problems.) Water for irrigation is assumed to come from off-site. Sloped areas would continue as the ALE Reserve, with managed public access.

These uses would be compatible with Native American uses, including gathering foods and medicines, and would provide for Native American access to sites that have cultural, historical, and religious significance.
- 2** *Option 2: Native American Uses*
Traditional Native American uses, hunting, pasturing animals, and gathering foods and medicines, would occur. In addition to access for these purposes, there would also be access to and protection of important religious and cultural sites. Except for livestock grazing, this option would be compatible with preservation of the ALE Reserve as currently managed.
- 3** *Option 3: ALE Reserve Managed as a Research Facility*
Current management of the ALE Reserve as a research facility would continue. This would include management for threatened and endangered species, wildlife and habitat values, preservation of natural areas and scenic values. Research and educational opportunities would continue. Public access would be allowed but would be carefully managed.

Current management of the ALE Reserve would be compatible with Native American uses, except for livestock grazing.

* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. The options are not presented in any priority order.

4

Option 4: Observatory, ALE Reserve, Museum/Research Center

This option for future uses is similar to *ALE Managed as a Research Facility*, but it "steps up" the amount of public access and educational opportunities. A museum/research center would be built along the highway with convenient public access; the public would also have access to the observatory on the Ridge. However, access to other areas would be managed to preserve natural areas, wildlife, animal/plant habitat and scenic values.

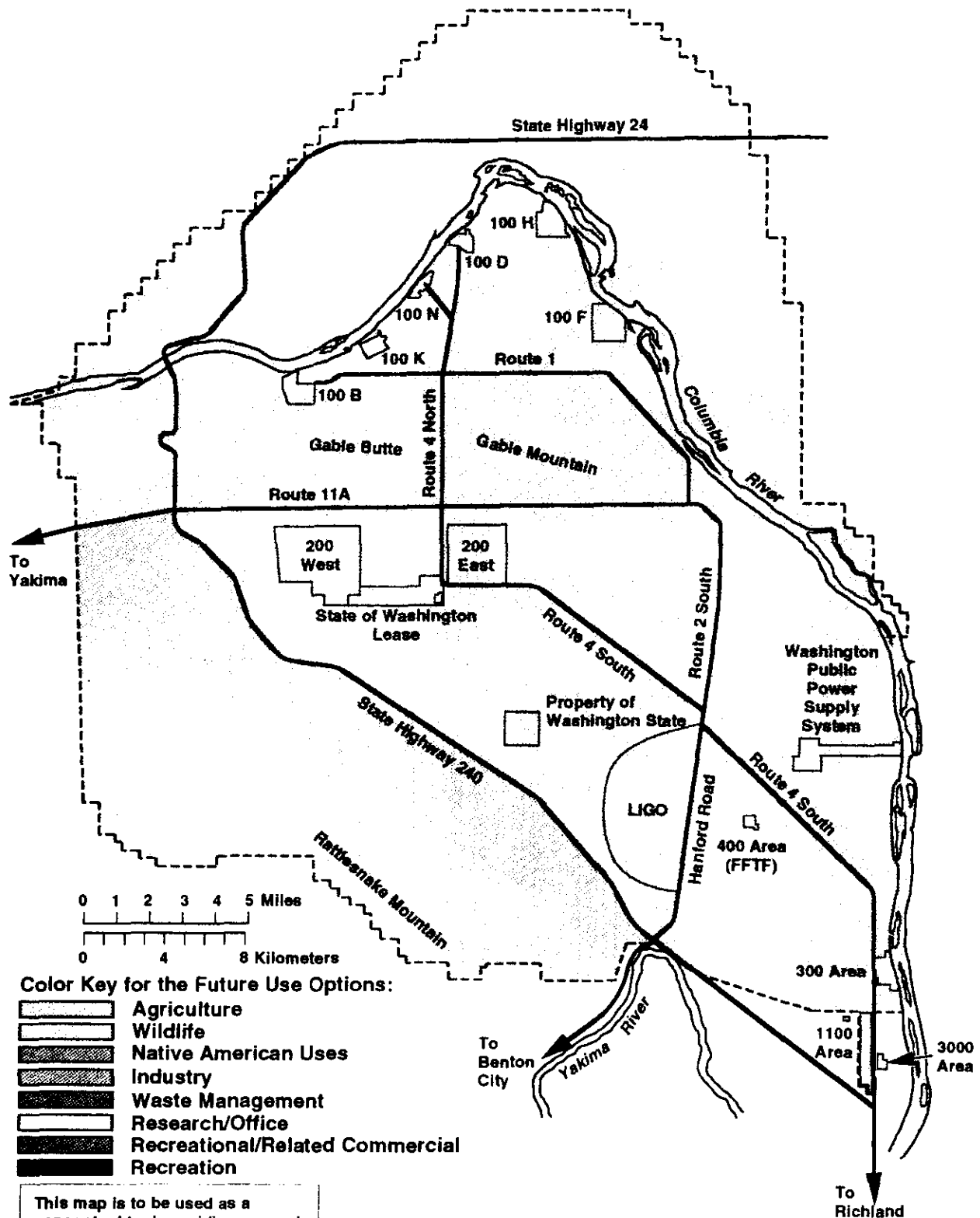
This future use option is compatible with Native American uses except for livestock grazing.

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Option 5: The Ridge as a Resource

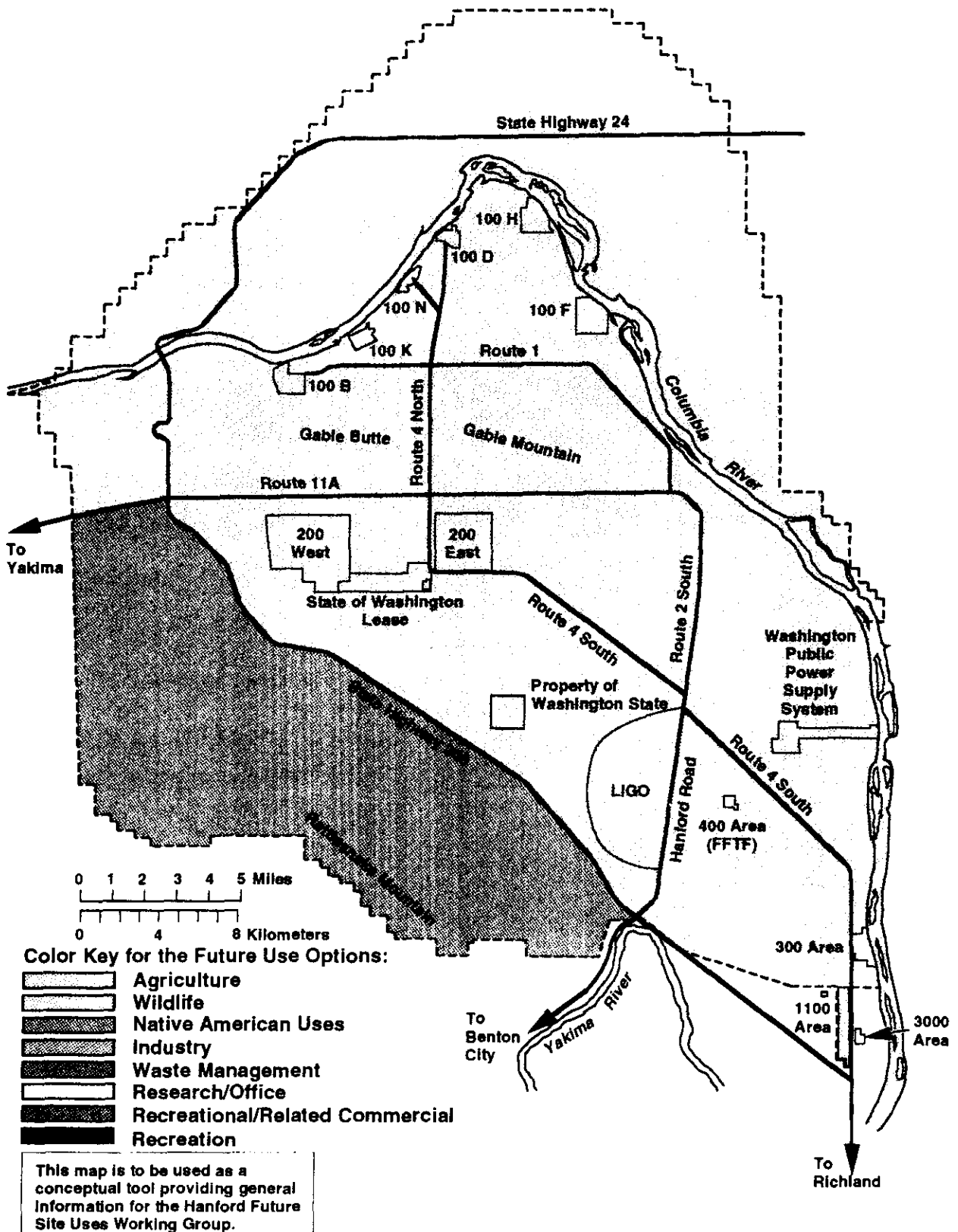
The top of Rattlesnake Ridge is a resource that may be valuable for future scientific and/or energy-producing facilities. These uses would be restricted to the top of the Ridge and would be acceptable if they did not negatively impact Native American uses or the wildlife and habitat in the ALE Reserve.

OPTION 1: Agriculture and ALE Reserve



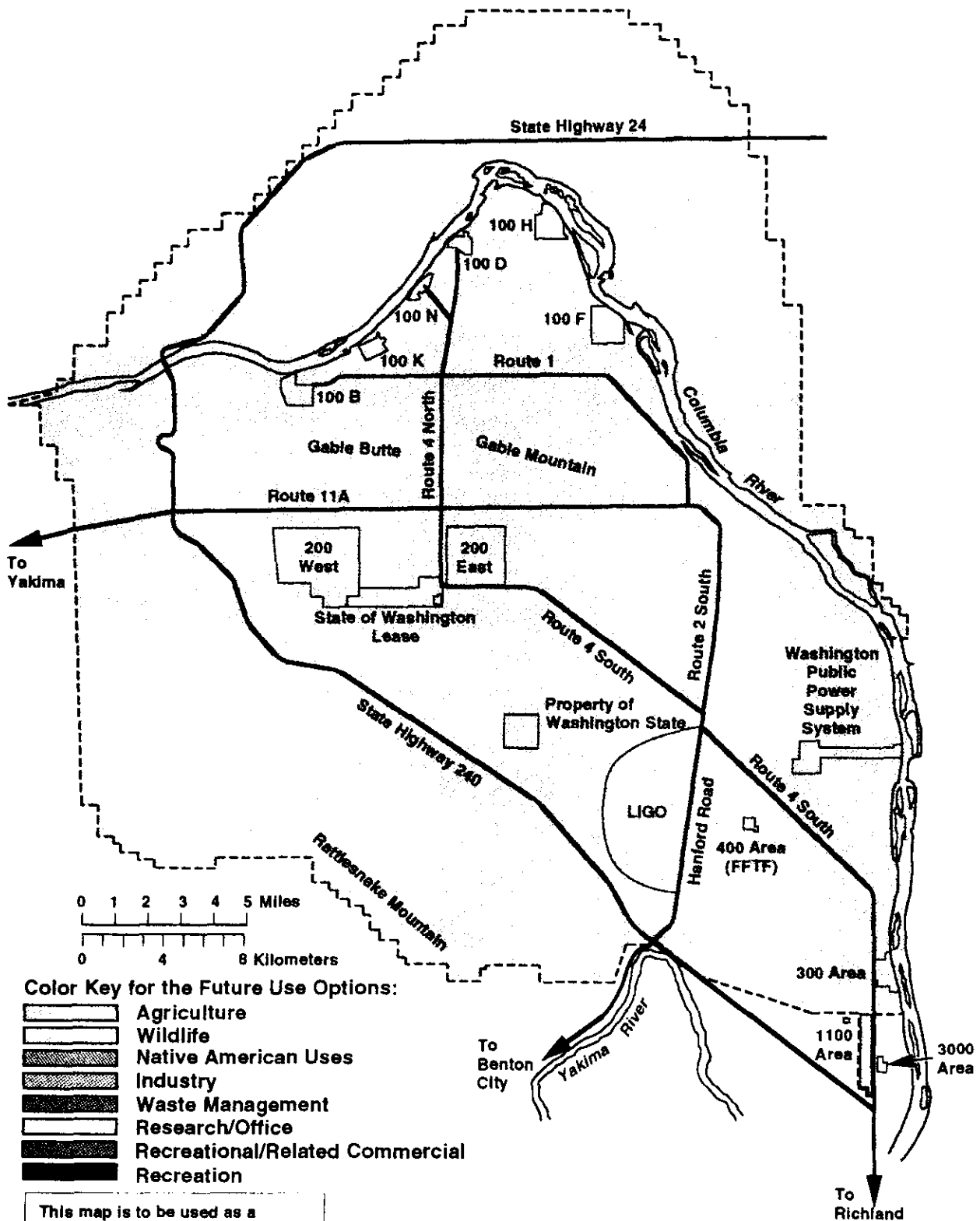
ERE/ALE-1

OPTION 2: Native American Uses

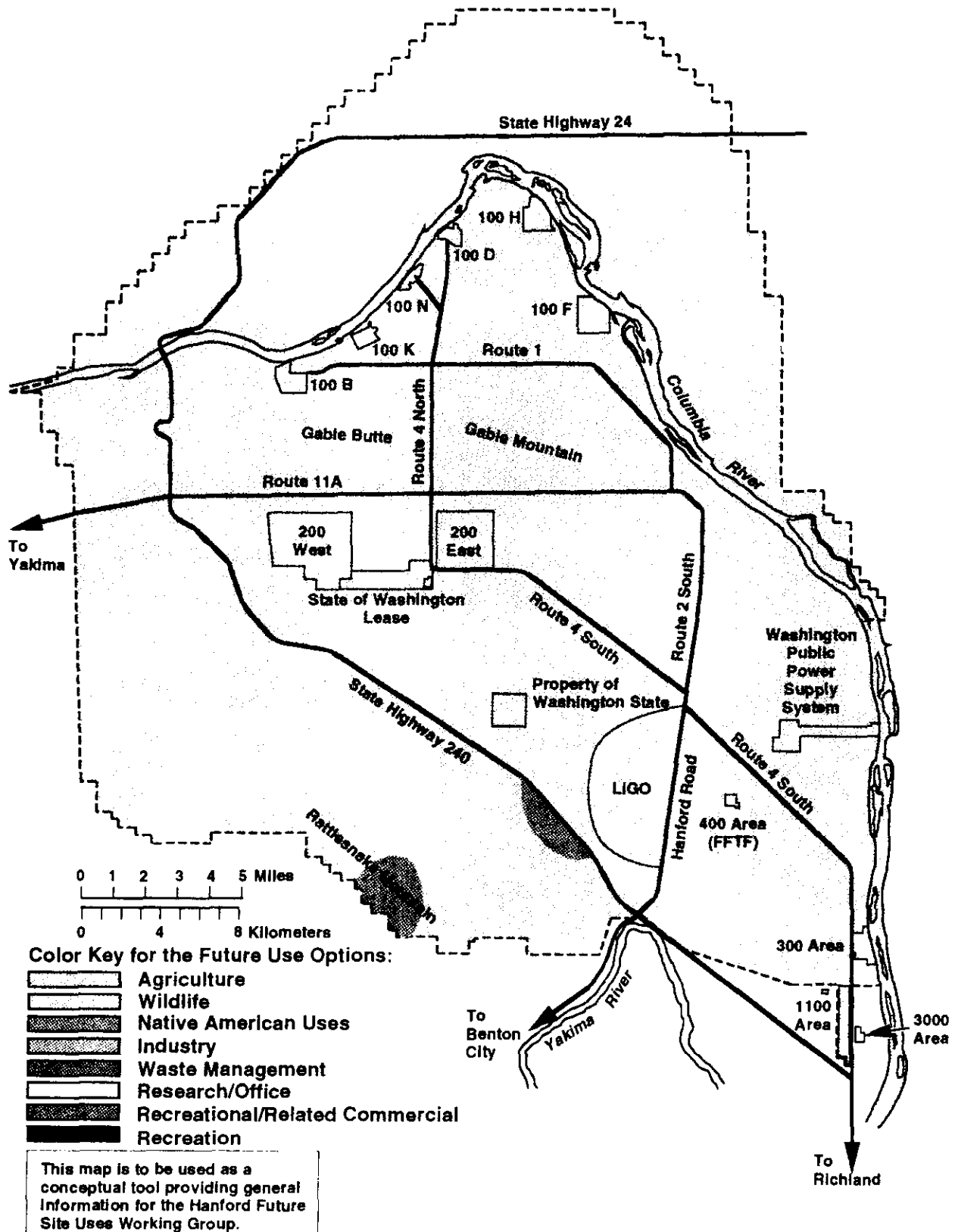


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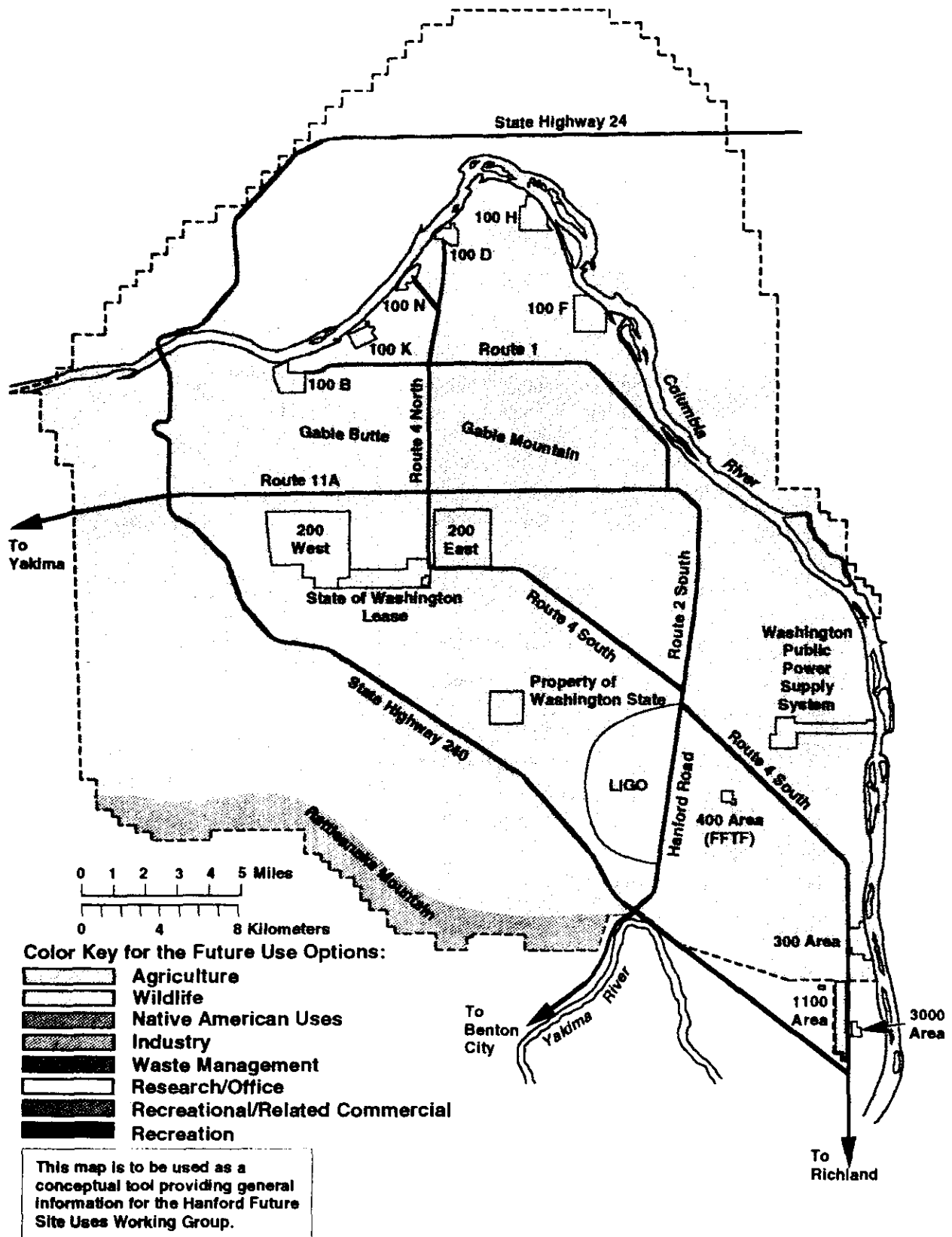
OPTION 3: ALE Research Managed as a Research Facility



OPTION 4: Observatory, ALE Reserve, Museum/Research Center



OPTION 5: The Ridge as a Resource



Cleanup Scenarios

The Working Group identified a single, "unrestricted" cleanup scenario for the ALE Reserve.



Cleanup Scenario A: Unrestricted

According to the "unrestricted cleanup scenario identified by the Working Group, potential future uses of the ALE Reserve would not, in any way, be restricted by surface contamination.

Use of the groundwater underneath the ALE Reserve would be restricted where it is contaminated or where drawing groundwater would spread contamination. However, none of the future use options for this area requires the use of groundwater from on-site.

Future Use Options Enabled by Cleanup Scenario A



Option 1: Agriculture and ALE Reserve

Option 2: Native American Uses

Option 3: ALE Reserve Managed as a Research Facility

Option 4: Observatory, ALE Reserve, Museum/Research Center

Option 5: The Ridge as a Resource

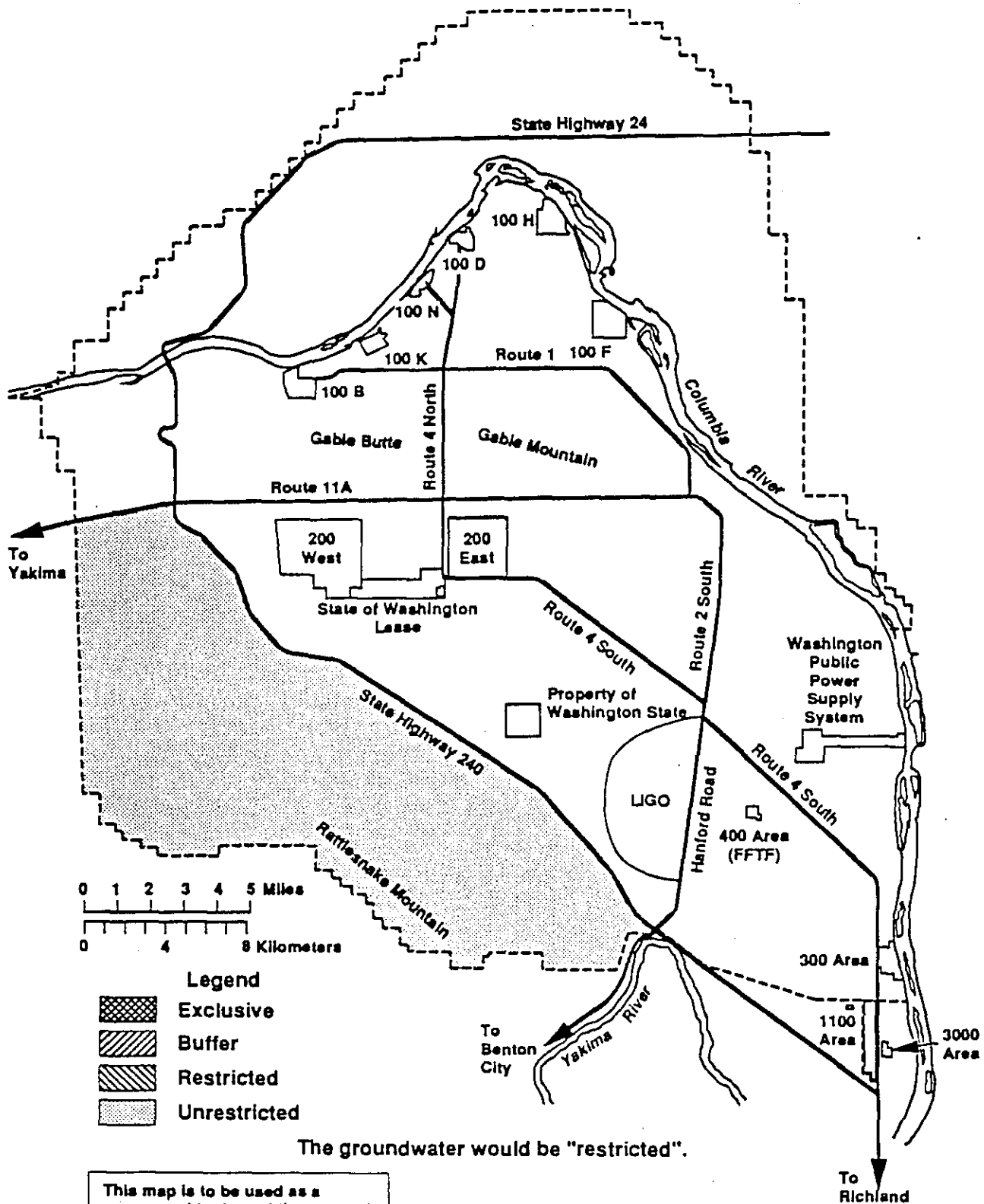
Timing and Importance

Because the contaminated areas in the ALE Reserve can be cleaned up at relatively low cost and quickly, using existing technology, the Working Group would like to see the cleanup of ALE Reserve begin immediately. The Group desires this early cleanup, provided it does not detract from cleaning up areas that pose an imminent health risk and provided the cost will be a small percentage of the overall cleanup budget. Early cleanup would make it a potential candidate to be declared excess, showing tangible progress in the cleanup.

Hanford Future Site Uses Working Group Basemap

Arid Lands Ecology Reserve

Cleanup Scenario A: "Unrestricted"





NORTH OF THE RIVER

Description The area north of the Columbia River encompasses about 140 square miles (or approximately 89,000 acres) of relatively undisturbed or returning shrub-steppe habitat. The area is currently managed in part by the Washington Department of Wildlife as the Wahluke Slope Wildlife Recreation Area, and in part by the U.S. Fish and Wildlife Service as the Saddle Mountain National Wildlife Refuge. Along the River, the White Bluffs provide scenic opportunities and are a rich area for fossils. The area North of the River provides a large-scale example of the native ecosystem that has been lost elsewhere in Eastern Washington, including shrub-steppe habitat and endangered

plants and animals. The soils in parts of the area and the mild climate with its early growing season also make this area prime agricultural land.

The area north of the Columbia River has remained primarily undeveloped since the Hanford site was established in 1943. The Wahluke Slope Wildlife Recreation Area was opened for daytime public recreational use in 1978. North of the River contains sites that have cultural, religious and archaeological significance to Native American tribes and provides recreational opportunities in the area managed by the state of Washington. The two areas of contamination north of the River are relatively small and do not contain radioactive contaminants.

Information Points about North of the River

Natural Features

- Endangered and threatened plants and animals, other species thriving
- Primarily ungrazed shrub-steppe habitat (some areas currently being grazed)
- Growing days -- 210 days at Ringold vs. 157 at Prosser
- Microclimate that is very important to wildlife
- The White Bluffs
- Ringold formation fossils
- Ringold clay formation

Cultural Aspects

- Archaeological sites
- Native American sites:
 - Saddle Mountain -- (religious site)
 - Burial sites
 - Winter village sites
 - Treaty fishing & food gathering and storage sites

CHAPTER 2 Geographic Areas

Land Uses

- Past uses -- irrigated agriculture, a townsite
- Current uses -- Wahluke Slope Wildlife Recreation Area (WA Dept. of Wildlife), Saddle Mountain National Wildlife Refuge (US Fish & Wildlife Service)
- Cattle grazing

Economic Considerations and Contributions

- Arable land
- Quarry sites, minerals, petrified wood
- Wildlife and fish resources
- Native plant and animal communities

Contamination

- US Bureau of Reclamation 2,4-D disposal site
- Wahluke Slope Nike Missile Site

Decisions

- Memorandum of Agreement between the Bureau of Reclamation and the Atomic Energy Commission, February, 1957
- Hanford Reach EIS - pending
- Cleanup decisions for waste sites
- Tri-Party Agreement: RCRA permit & Superfund actions
- An Expedited Response Action, presently being undertaken to clean up the waste sites in 1993
- Bureau of Reclamation designation of the Red Zone

Findings and Recommendations

There is no known radioactive contamination in the area North of the River. There are two contaminated areas: a former Nike missile site and an area where the chemical 2,4-D was dumped.

Public access already exists in the area North of the River, to a greater extent in the Wahluke Slope Wildlife Recreation Area, managed by the Washington State Department of Wildlife, and to a lesser extent in the Saddle Mountain National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service.

Sloughing of the White Bluffs, while not a cleanup issue, is a key concern in this area for water and habitat quality. At present the Bureau of Reclamation will not permit irrigation with federal water in the Red Zone. The Red Zone is a portion of the area North of the River where irrigation is currently prohibited because of the presence of Ringold clay formations that are of low permeability and, when saturated, cause the soils above to slip. The result is sloughing of the White Bluffs.

Future Use Options

The Working Group proposed three future use options as both plausible and possible for the area North of the River.* The array of potential uses included:

- 1** *Option 1: Agriculture, Wildlife and Native American Uses*
Agriculture and livestock grazing would occur in certain portions of this geographic area outside the Red Zone. The Red Zone north of Highway 24 would be studied to see if irrigated agriculture could be safely practiced. If not, the Red Zone would be managed, with other portions of the area where soils or conditions are inappropriate for agriculture, for wildlife, habitat and recreational uses. Native American uses would be assumed to occur in certain areas along the River. There would be a quarter-mile buffer zone along the River where agriculture would not be allowed.

This option would preserve values associated with the River: spawning beds for salmon and steelhead, eagle habitat, recreational uses, and species dependent upon riverine habitat.

Wildlife and recreational uses would be compatible with Native American uses, except for livestock grazing.

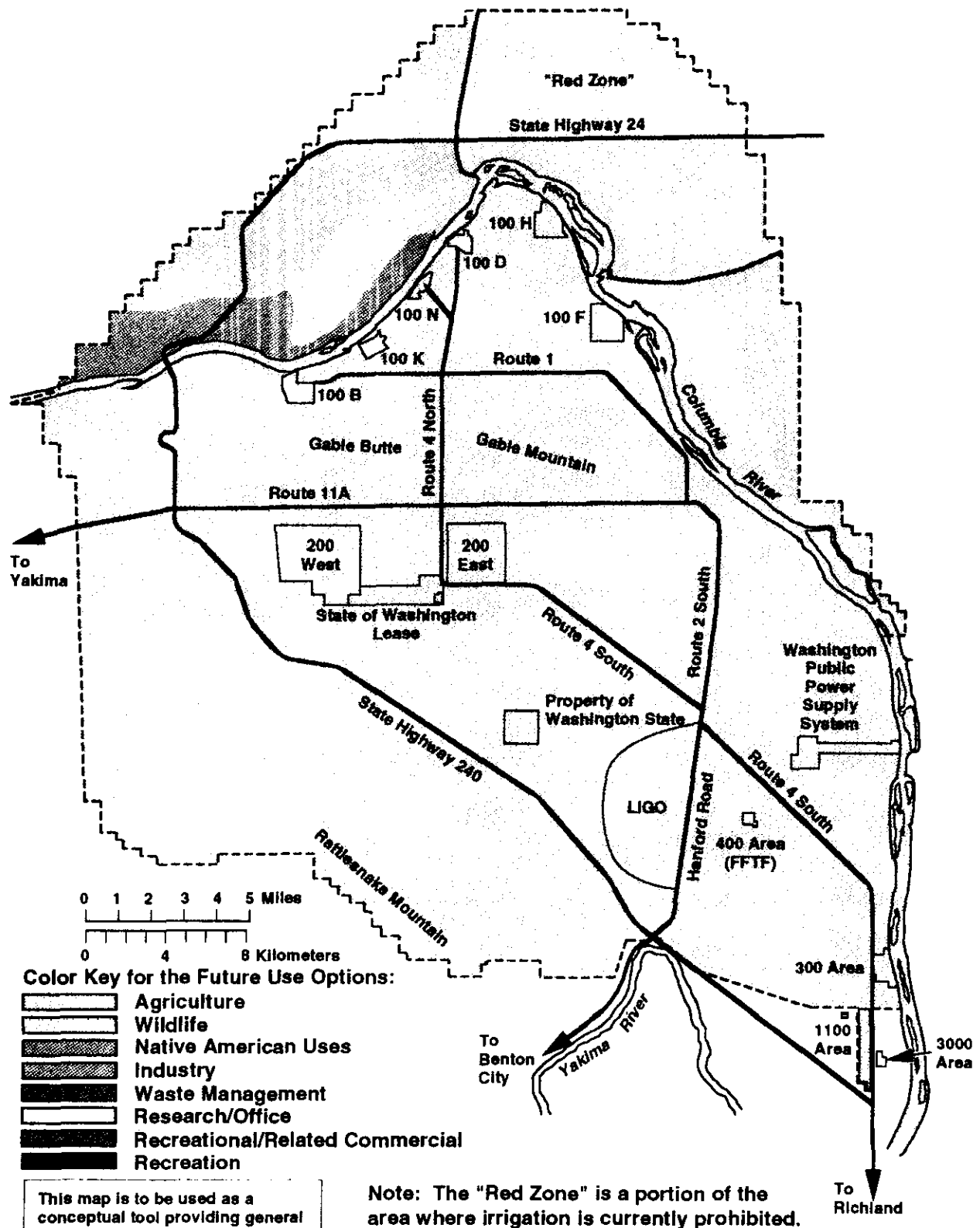
- 2** *Option 2: Wildlife and Wildlife/Wild Lands Recreation*
Shrub steppe habitat, one of the fastest disappearing habitats in the State of Washington, would be protected in the area North of the River and would provide a buffer zone for the Hanford Reach. Existing recreational uses and opportunities for research and education would continue. This option would be compatible with Red Zone constraints and would preserve values associated with the River: spawning beds for salmon and steelhead, eagle habitat, recreational uses, and species dependent upon the habitat.

This option would be compatible with Native American uses, except for livestock grazing. It would allow access to the River and would ensure that archaeological sites would continue to remain undisturbed.

- 3** *Option 3: Native American Uses*
Traditional Native Americans uses of the area, hunting, fishing, pasturing animals, and gathering foods and medicines, would occur. In addition to access to the River, there would be access to and protection of cultural and religious sites. Archaeological districts on the land, the islands and the River would be protected.

* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. They are not in priority order.

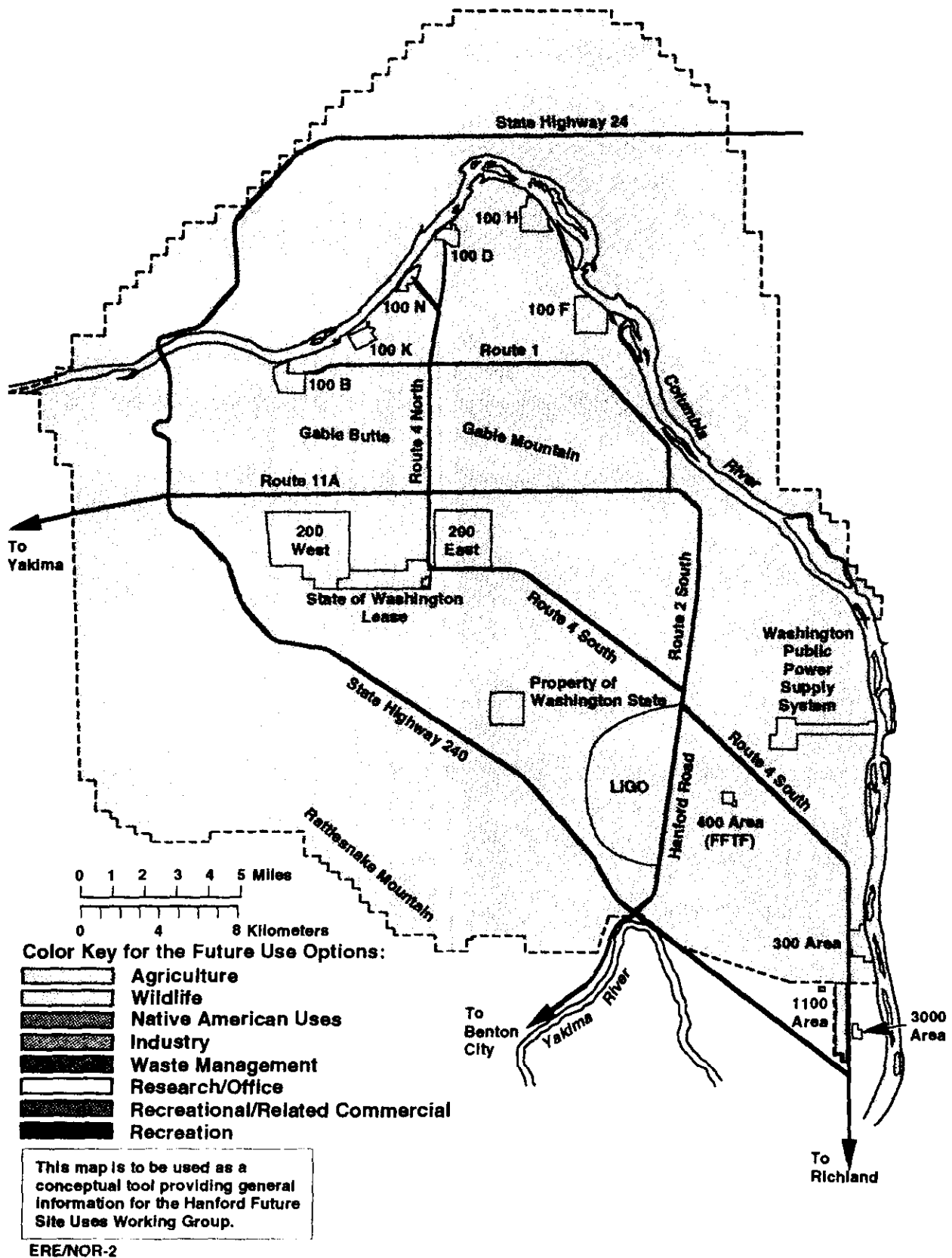
OPTION 1: Agriculture, Wildlife and Native American Uses



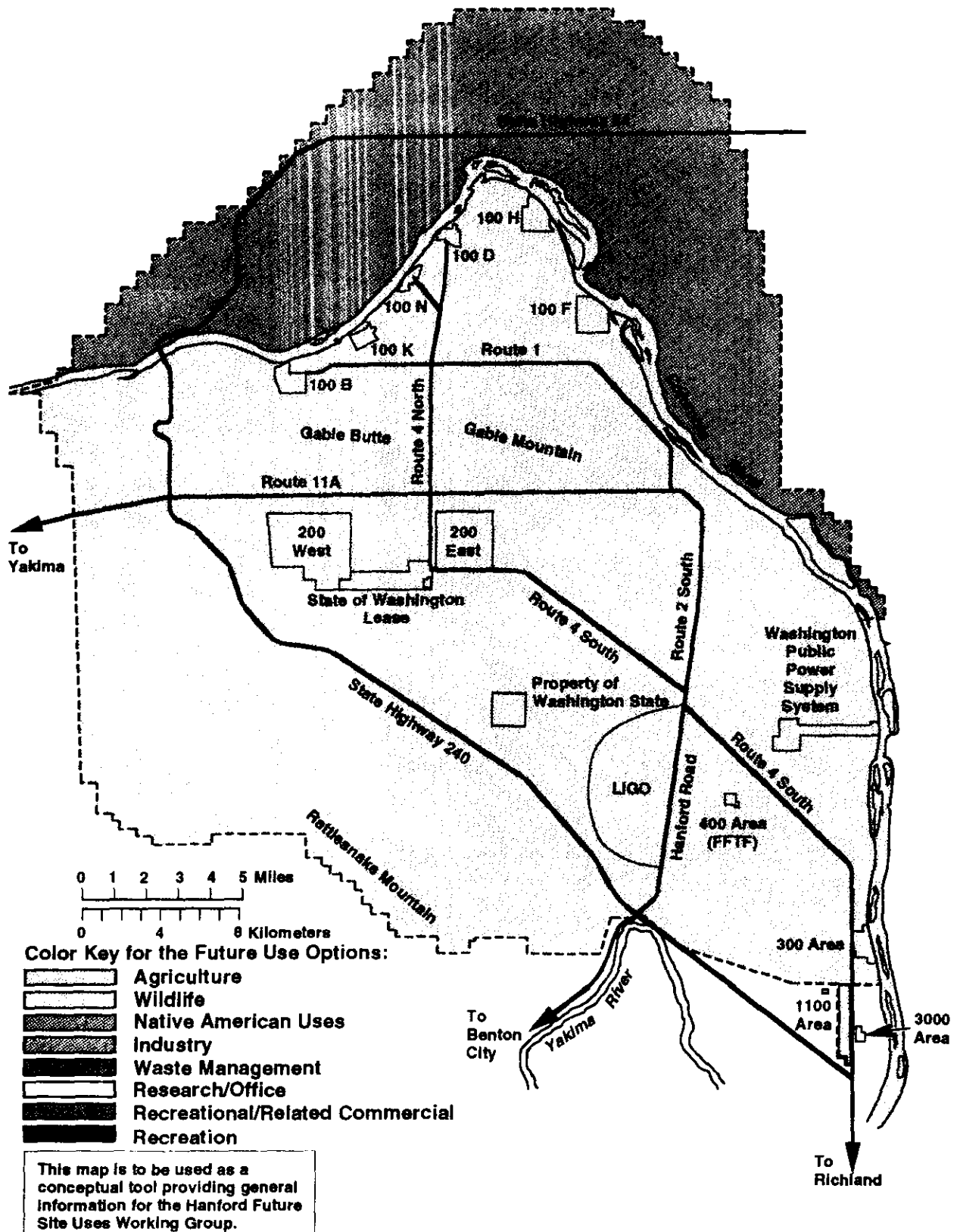
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

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OPTION 2: Wildlife and Wildlife/Wild Lands Recreation



OPTION 3: Native American Uses



Cleanup Scenarios

The Working Group identified a single, "unrestricted" cleanup scenario for North of the River.

- (A) *Cleanup Scenario A: Unrestricted*
Under this "unrestricted" scenario, potential future uses of the area North of the River would in no way be constrained by the presence of contamination on the surface or in the groundwater.

Future Use Options Enabled by Cleanup Scenario A



- Option 1: Agriculture, Wildlife and Native American Uses
Option 2: Wildlife and Wildlife/Wild Lands Recreation
Option 3: Native American Uses

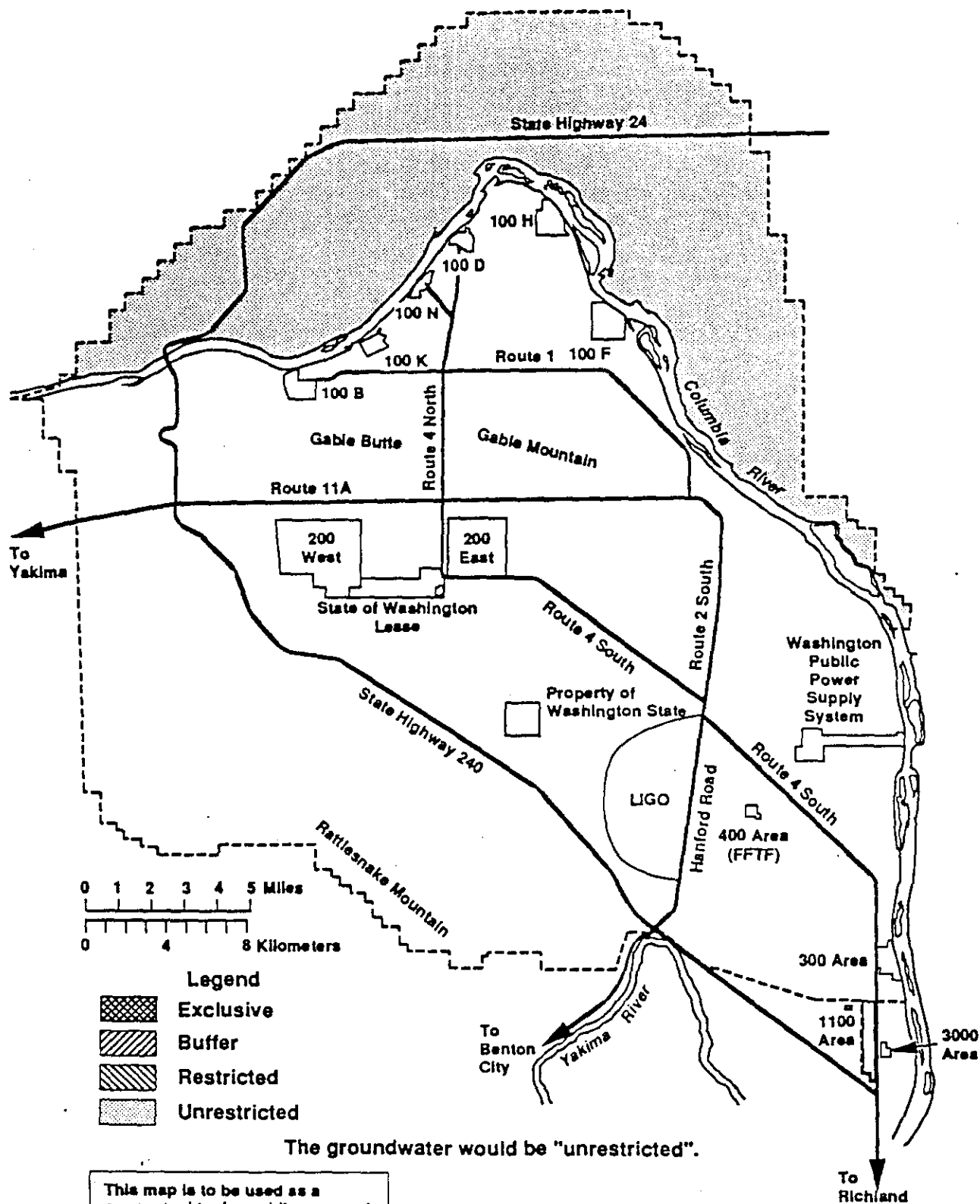
Timing and Importance

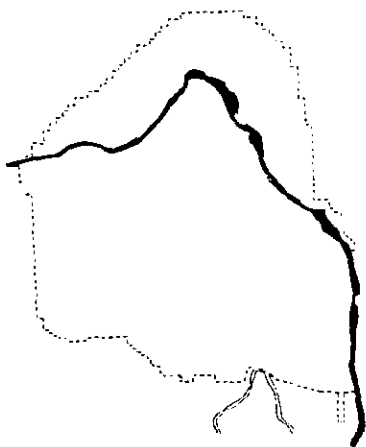
Because the contaminated areas North of the River can be cleaned up at relatively low cost and quickly, using existing technology, the Working Group would like to see the cleanup of North of the River begin immediately. The Group desires this early cleanup, provided it does not detract from cleaning up areas that pose an imminent health risk and provided the cost will be a small percentage of the overall cleanup budget. Early cleanup would make it a potential candidate to be declared excess, showing tangible progress in the cleanup.

Hanford Future Site Uses Working Group Basemap

North of the River

Cleanup Scenario A: "Unrestricted"





COLUMBIA RIVER

Description: Fifty-one miles of the Columbia River flow through or border on the Hanford site. This stretch of the River offers a unique example of the riverine and riparian (riverside) ecologies that characterized the Columbia Basin ecosystem before hydroelectric dams were built. This segment of the River contains forty-nine of fifty-one miles of the Hanford Reach, the last unimpounded stretch of the Columbia River. Over one third of the River's fall chinook salmon spawn here naturally. The River, its banks and its islands provide habitat for several species of endangered or threatened plants and animals.

The Native American tribes who once lived on the site have cultural ties to the River itself, their numerous burial sites along its banks and on its islands, and their traditional fishing and food gathering sites. The River is also a source of recreation for residents in the area. Access to the River raises concerns due to contamination to the groundwater that reaches the River from the Hanford site at several locations through springs and seeps. The Department of Energy and others currently monitor for contamination in the River both upstream and downstream from the site. At present, any contamination that goes into the River from the site is diluted to well below federal drinking water standards before it reaches the City of Richland. River water is used downstream from the site by both Washington and Oregon residents for drinking water, agriculture, industry and recreation.

Information Points about the Columbia River

Natural Features

- Flow rate creates good conditions for natural spawning of more than 1/3 of River's fall chinook salmon
- Riparian zone (riverside) ecology
- Unique Columbia Basin ecosystem
- Endangered and threatened plants and animals, other species thriving

Cultural Aspects

- Over 120 inventoried archaeological sites along banks
- Native American treaty rights
- Native American sites:
 - Cultural ties to river itself
 - Burial sites on islands
 - Traditional fishing & food gathering sites
- Spiritual significance of the River

CHAPTER 2 Geographic Areas

Land and Water Uses

- Drinking water for Richland withdrawn downstream
- Water for drinking, irrigation, and industry withdrawn downstream by WA and OR residents
- Moratorium on new water rights imposed by WA Ecology in Dec. 1991
- Recreational uses
- Wildlife refuges on some islands

Economic Considerations and Contributions

- Recreational opportunities
- Salmon and steelhead spawning resource
- Native American treaty fishing rights
- Water withdrawn for on-site use not available for other uses
- Native plant and animal communities

Contamination

- River monitoring upstream and downstream for contaminants
- "N-springs" contamination
- Other groundwater contamination plumes enter river
- Contaminated outfall structures and pipes associated with reactors protrude into river
- Sediment contamination due to past practices
- Other sources of contamination under investigation

Decisions

- Hanford Reach EIS - pending
- Reactor Decommissioning EIS - pending
- Tri-Party Agreement: RCRA permit & Superfund actions

Findings and Recommendations

Cleanup of sediments in the river or of contaminants in the riparian zone or on the islands should be undertaken only if the cleanup can occur without causing more harm than good.

There should be no damming or dredging in the Hanford Reach.

Sloughing of the White Bluffs should be stopped, but cleanup funds should not be used for this purpose.

All cultural and archaeological resources and areas of cultural significance should be protected.

Wildlife habitat should be protected.

Class A water quality should be maintained, over the long term, with reasonable efforts made to improve the water quality over time. (Class A water quality is defined in the Washington Admin. Code Chapter 173-201 and is intended to support all beneficial uses of water.)

Future Use Options

The Working Group developed three future use options for the Columbia River:*

- 1** *Option 1: Wildlife and Recreation*
The Hanford Reach of the Columbia River and the lands that border the Reach on either side would be protected and managed for wildlife and recreational values.

This use would be compatible with Native American uses, except for grazing of livestock; it would provide access to and protection for sites along the river that have religious, cultural and archaeological importance.

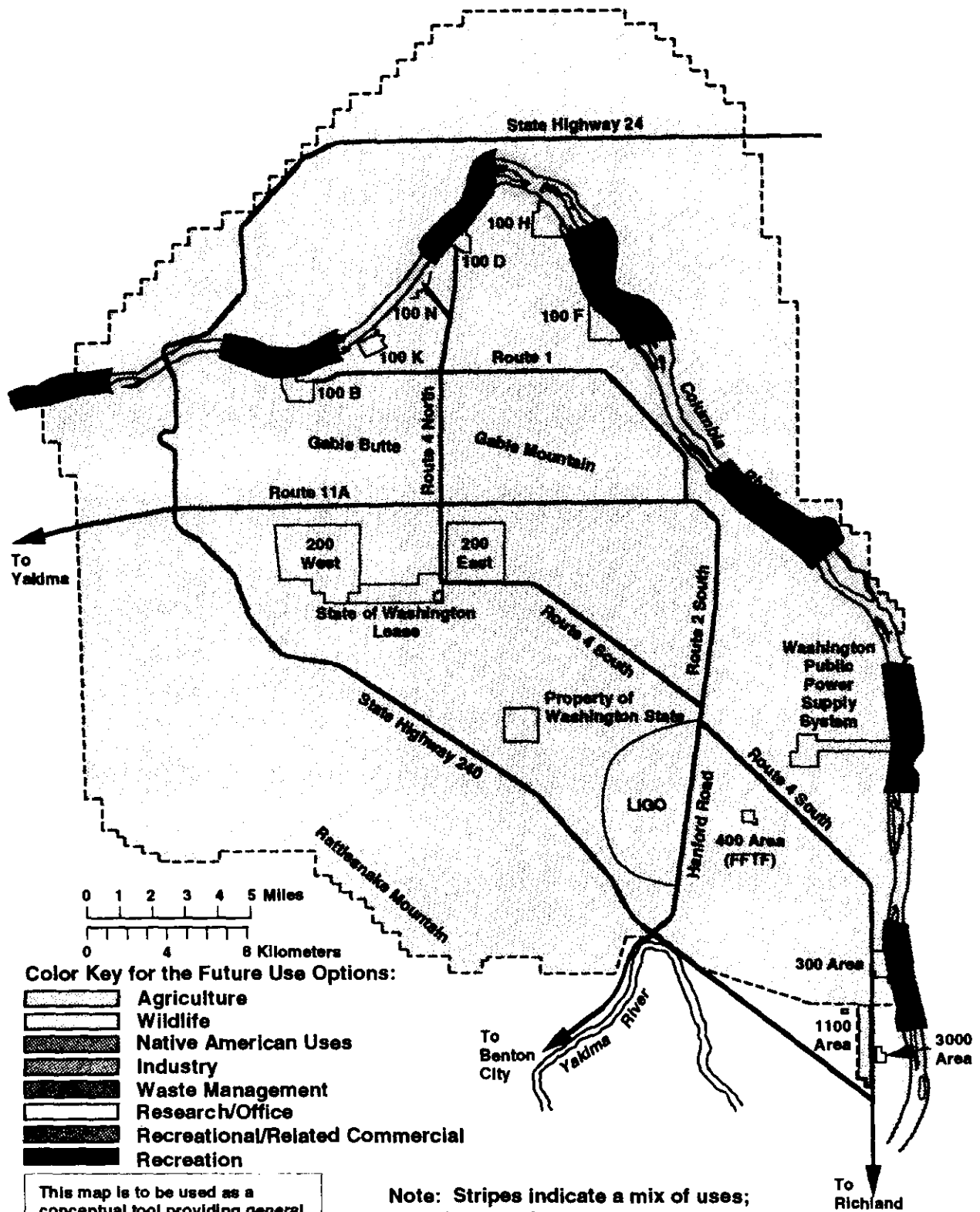
- 2** *Option 2: Recreational and Related Commercial, Scenic and Economic Uses*
Current recreational uses along the River, such as boating, hunting, fishing, birdwatching and sightseeing would continue. In addition, existing private uses along the River, including withdrawal of water from and discharges to the River for irrigated agriculture, would also continue. The River would remain free-flowing, with no dams and no dredging. Native American archaeological sites along the River would be preserved.

This future use option would be compatible with Native American uses, except pasturing livestock.

- 3** *Option 3: Native American Uses*
Traditional Native American uses, hunting, fishing, pasturing animals and gathering food and medicines, would occur. Access to and protection of important religious, cultural and archaeological sites would be provided.

* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. They are not in priority order.

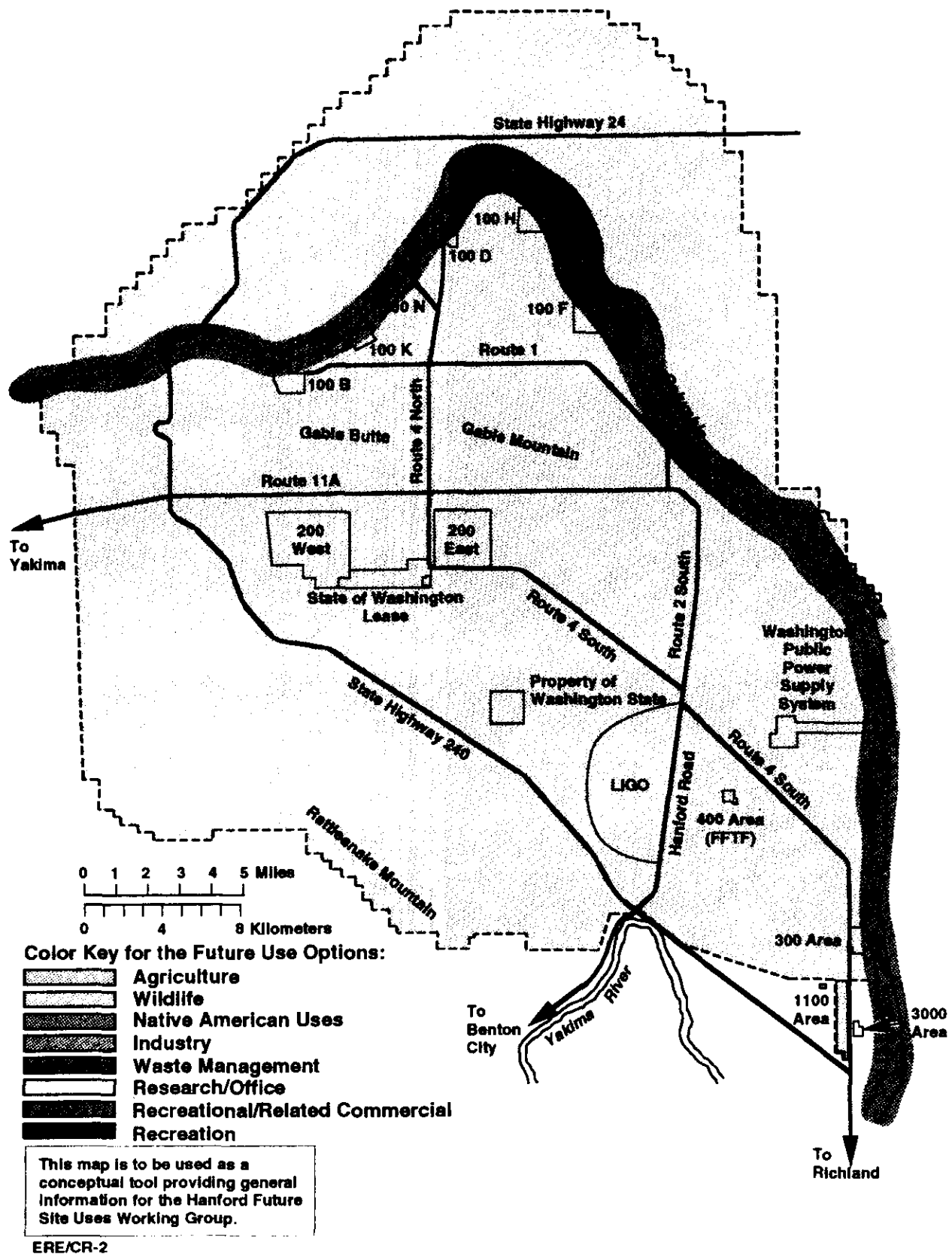
OPTION 1: Wildlife and Recreation



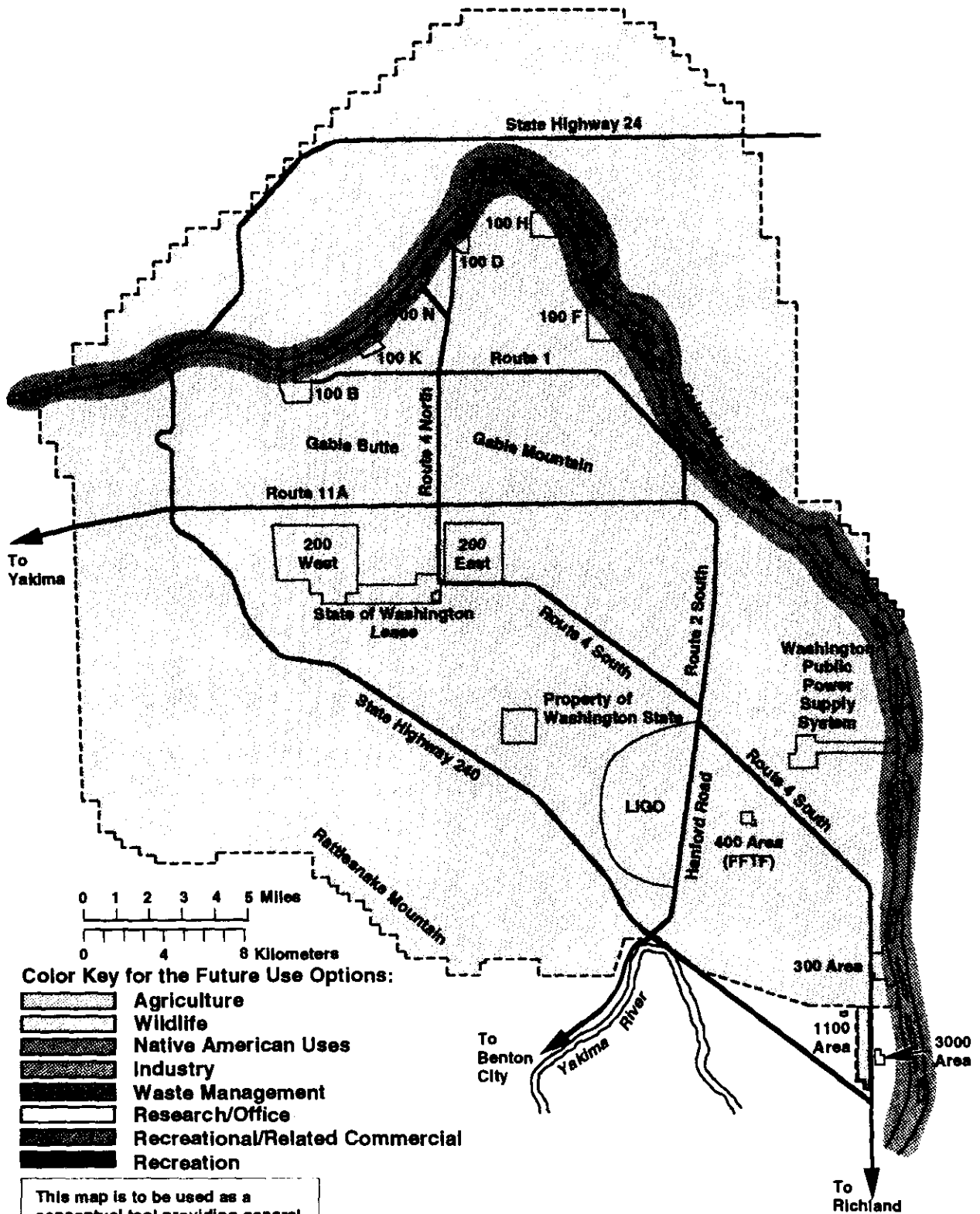
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

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OPTION 2: Recreational, Scenic and Economic Uses



OPTION 3: Native American Uses



Cleanup Scenarios

A single, "unrestricted" cleanup scenario was developed for the Columbia River.

- Ⓐ **Cleanup Scenario A: "Unrestricted"**
 The Working Group developed one cleanup scenario for the Columbia River: use of the Columbia River, including the riparian zone and islands in the River, would be "unrestricted" due to contamination.

Future Use Options Enabled by Cleanup Scenario A



- Option 1: Wildlife and Recreation
 Option 2: Recreational and Related Commercial, Scenic and Economic Uses
 Option 3: Native American Uses

Timing and Importance

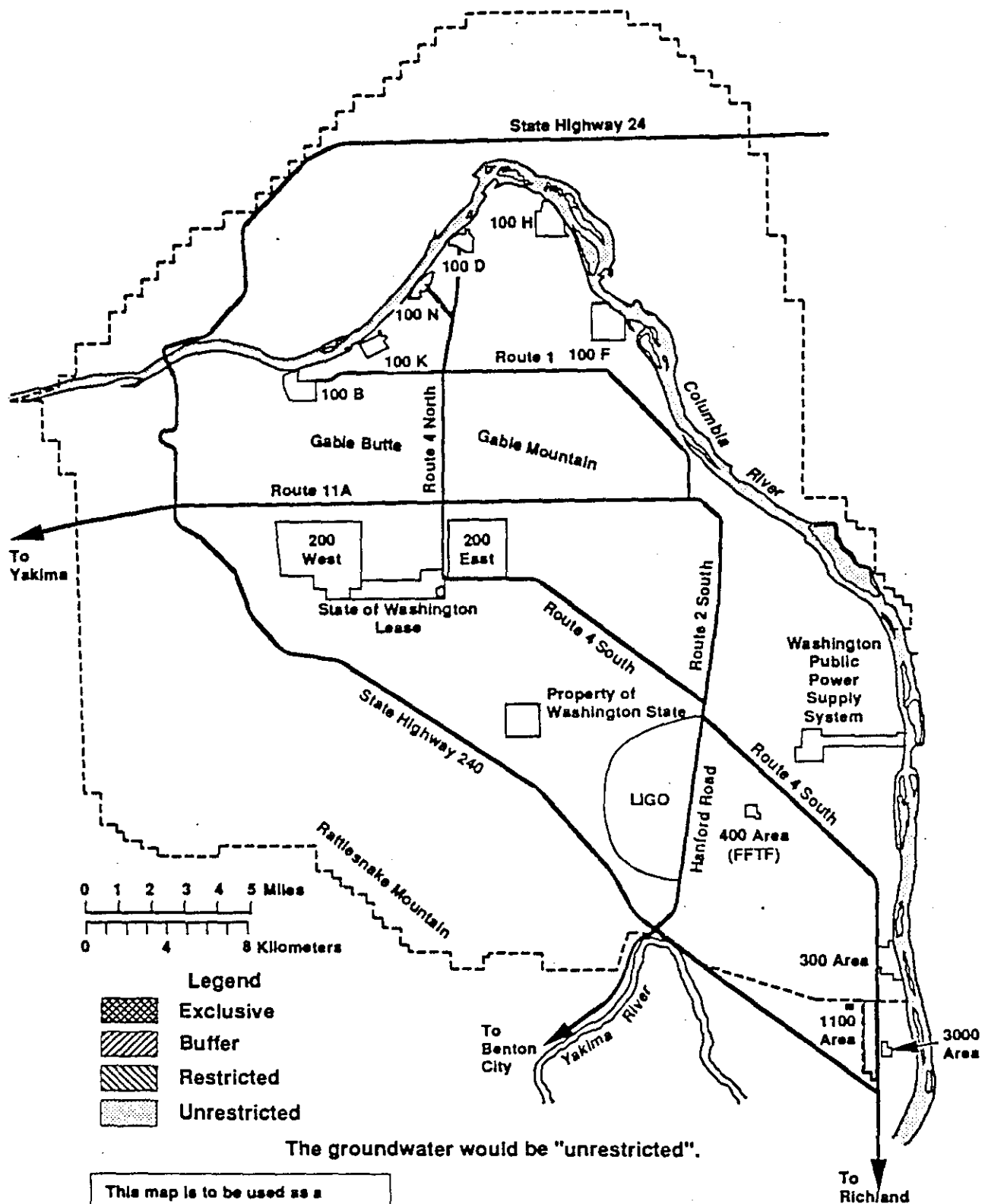
Because of the current use of the Columbia River as a source of water for drinking and irrigation downstream, of public access to the River, and of proposed future uses, cleaning up flows of contaminated water into the Columbia River in this area is an immediate priority. The following specific areas were identified as most important for cleanup:

- N reactor area with associated springs and seeps
- K Basins
- Groundwater contamination flowing into the River

Hanford Future Site Uses Working Group Basemap

Columbia River

Cleanup Scenario A: "Unrestricted"



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/CR-A



REACTORS ON THE RIVER (100 AREA - NPL SITE)

Description: This geographic area includes all of the facilities in the 100 Area (9 reactor sites, associated facilities and structures, low-level waste burial grounds and irradiated fuel storage in the K area basins) as well as the land in between. The boundaries of this geographic area correspond to the aggregate area which includes all of the 100 Area operable units. This area was added to the CERCLA National Priorities List (NPL) in 1989. The Reactors on the River area (100 Area - NPL Site) takes up about 26.6 square miles (or 17,000 acres) of land to the south of the Columbia River. Eight of the nine plutonium production reactors in this area were retired in the 1960's. The ninth reactor, N reactor, was shut down in 1991. The B Reactor was added to the National Register of Historic Places in 1992.

The Reactors on the River area (100 Area - NPL Site) also includes numerous archaeological sites, Native American burial sites, and traditional fishing and food gathering sites. Many threatened or endangered species of plants and animals inhabit the undeveloped sections of this area. Extensive contamination exists in some areas of the surface, subsurface and groundwater. The groundwater contamination is above EPA drinking water standards for some contaminants. Contamination reaches the River through the groundwater seeps and the "N-springs."

Information Points about the Reactors on the River area (100 Area - NPL Site)

Natural Features

- Groundwater flows to river -- can reverse in near-shore areas
- Depth to groundwater averages 50 feet
- Threatened and endangered plants and animals, other species thriving

Cultural Aspects

- Archaeological sites
- Native American treaty rights
- Native American sites:
 - Burial sites
 - Traditional fishing & food gathering sites
- White Bluffs townsite
- B Reactor on National Register of Historic Places

Land Uses

- Past uses -- eight plutonium production reactors retired in 1960's, plus N reactor shut down in 1991

CHAPTER 2 Geographic Areas

- Current uses --38 low-level waste burial grounds, 5 burning pits
- Irradiated fuel storage in "K" Area basins

Economic Considerations and Contributions

- Current employment -- approximately 400
- WPPSS turbine generator attached to N Reactor
- Native plant and animal communities

Contamination

- Groundwater contamination above EPA drinking water standards for some contaminants
- Sources of contamination include liquid discharges to the ground and buried solids
- Sodium dichromate, tritium, and strontium-90 are among primary contaminants of concern in 100 Area
- 170 acres of surface contamination
- 20 of 72 source operable units
- 110 waste disposal sites

Decisions

- Hanford Reach EIS - pending
- Reactor Decommissioning EIS - pending
- Tri-Party Agreement: RCRA permit & Superfund actions
- NPDES Permit for N-Springs

Findings and Recommendations

Archaeological sites and areas of cultural significance to Native American tribes should be protected.

Wildlife habitat should be protected.

Short-term restrictions on uses of the land in the "unrestricted" zone may be necessary during the cleanup period. For example, facilities for the treatment of 100 Area waste or groundwater may be needed to remove contamination.

Future Use Options

The Working Group identified four future use options:*

1 *Option 1: Native American Uses*
This future use option assumes that all reactors, support structures, and outfalls to the River would be removed and the area would be allowed to return to a natural state. The groundwater would be cleaned up and available for use. This future use option assumes traditional Native American uses, such as fishing, hunting, pasturing of livestock, and gathering foods and medicines. It would also provide access to and protection of important religious and cultural sites.

2 *Option 2: Limited Recreation, Recreation-Related Commercial Uses and Wildlife*
There would be a mix of activities. General recreational and commercial activities would be the focus in certain areas, while management for wildlife and habitat would dominate in others.

This future use option would be compatible with Native American uses, except for livestock grazing in areas that would be managed for wildlife and habitat.

3 *Option 3: B Reactor As Museum/Visitor Center*
The B Reactor, on the National Register of Historic Places, would remain in place, and a museum/visitor center would be developed in the vicinity. The other reactors are assumed to have been removed. The area outside of the B Reactor and associated museum/visitor center would be managed for wildlife, recreation and recreationally-related commercial activities.

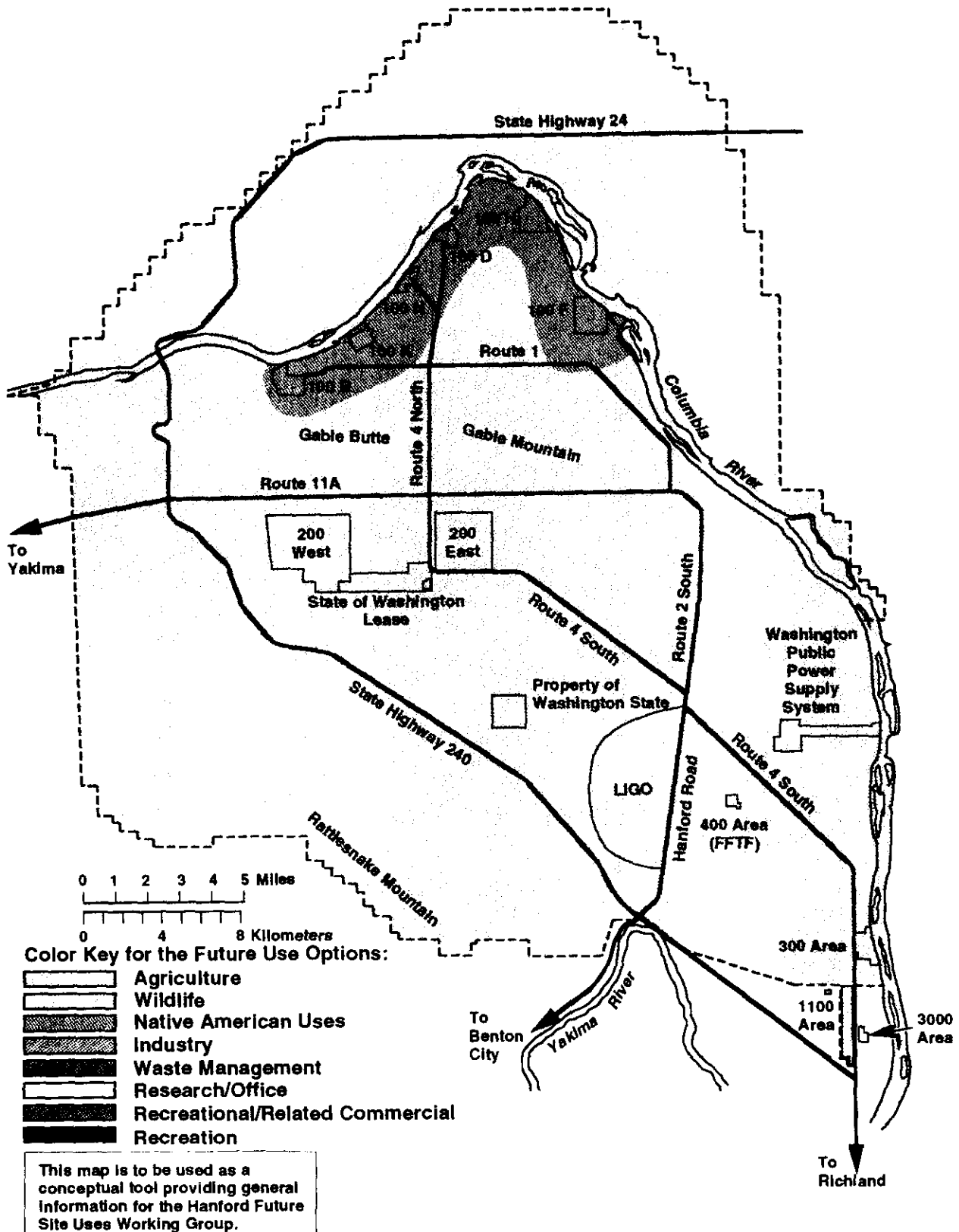
This future use option would be compatible with Native American uses, except for grazing in areas that would be managed for wildlife and habitat.

4 *Option 4: Wildlife and Recreation*
There would be a mix of activities in the area. Much of the area would be managed for wildlife and habitat while the remainder would permit such low-impact recreational activities as boating, sport fishing, hiking, birdwatching and wildlife viewing.

This future use option would be compatible with Native American uses, except for grazing in areas that would be managed for wildlife and habitat.

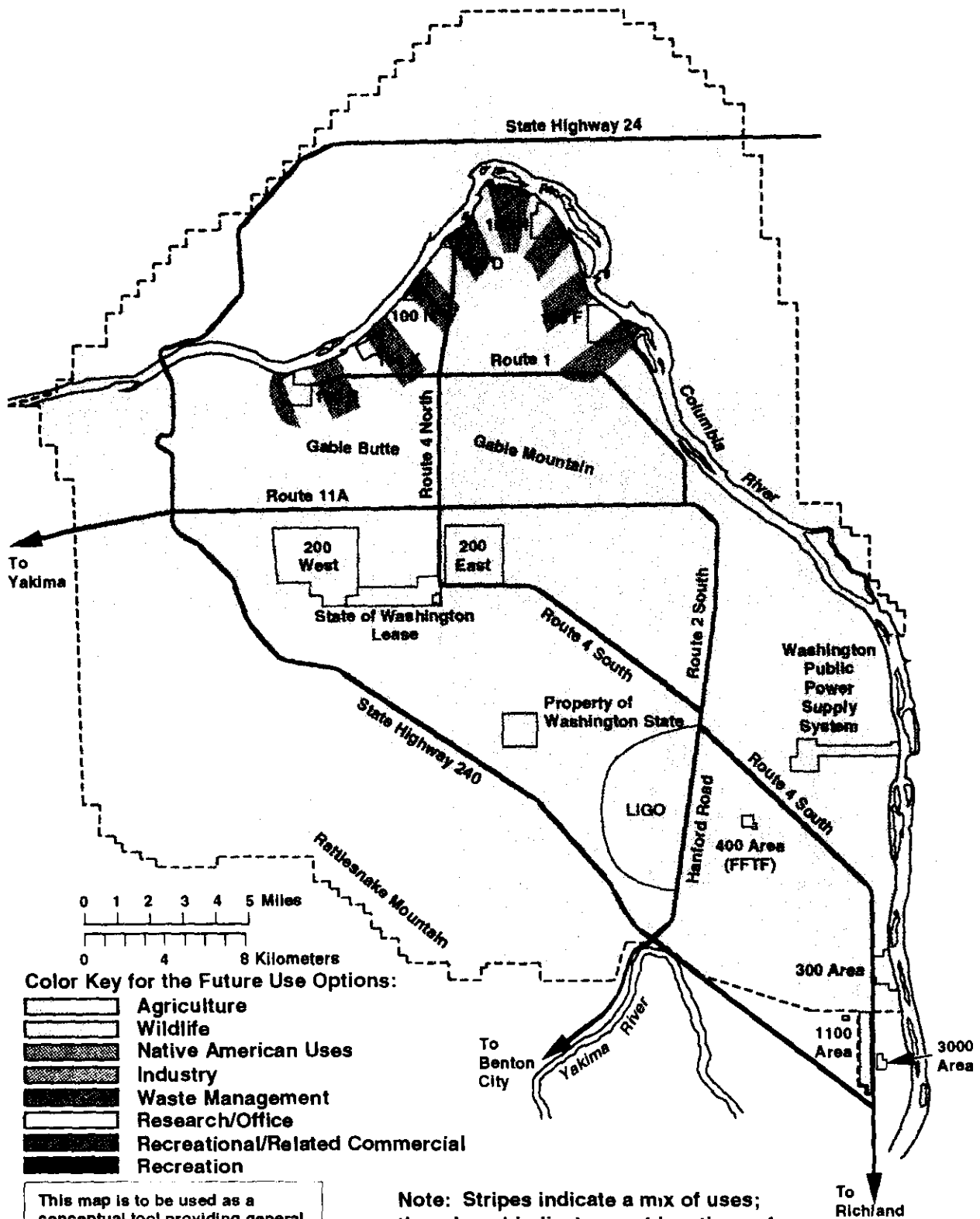
* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. They are not in priority order.

OPTION 1: Native American Uses



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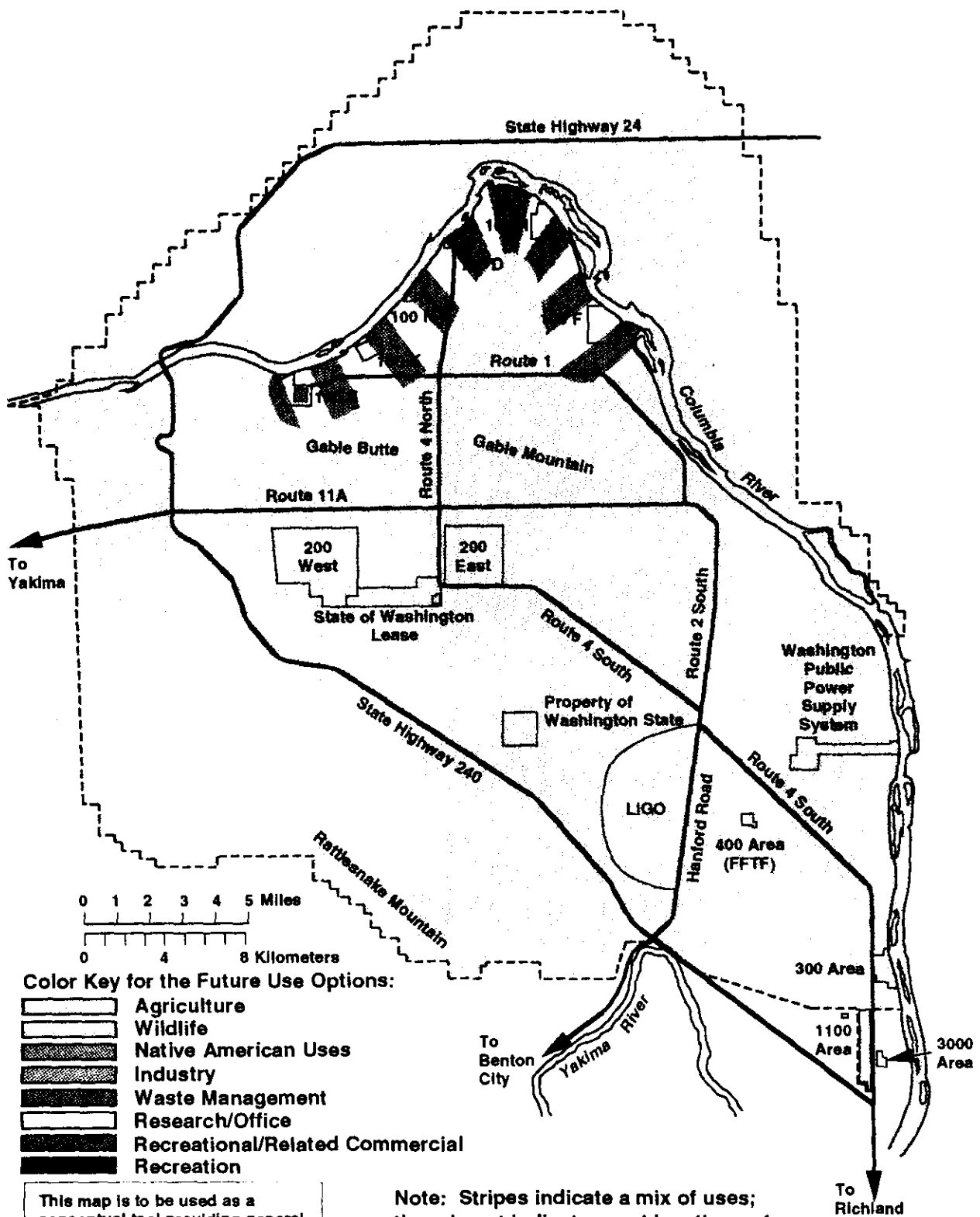
OPTION 2: Limited Recreation, Recreation-Related Commercial, and Wildlife



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

Note: Stripes indicate a mix of uses; they do not indicate exact locations of specific uses.

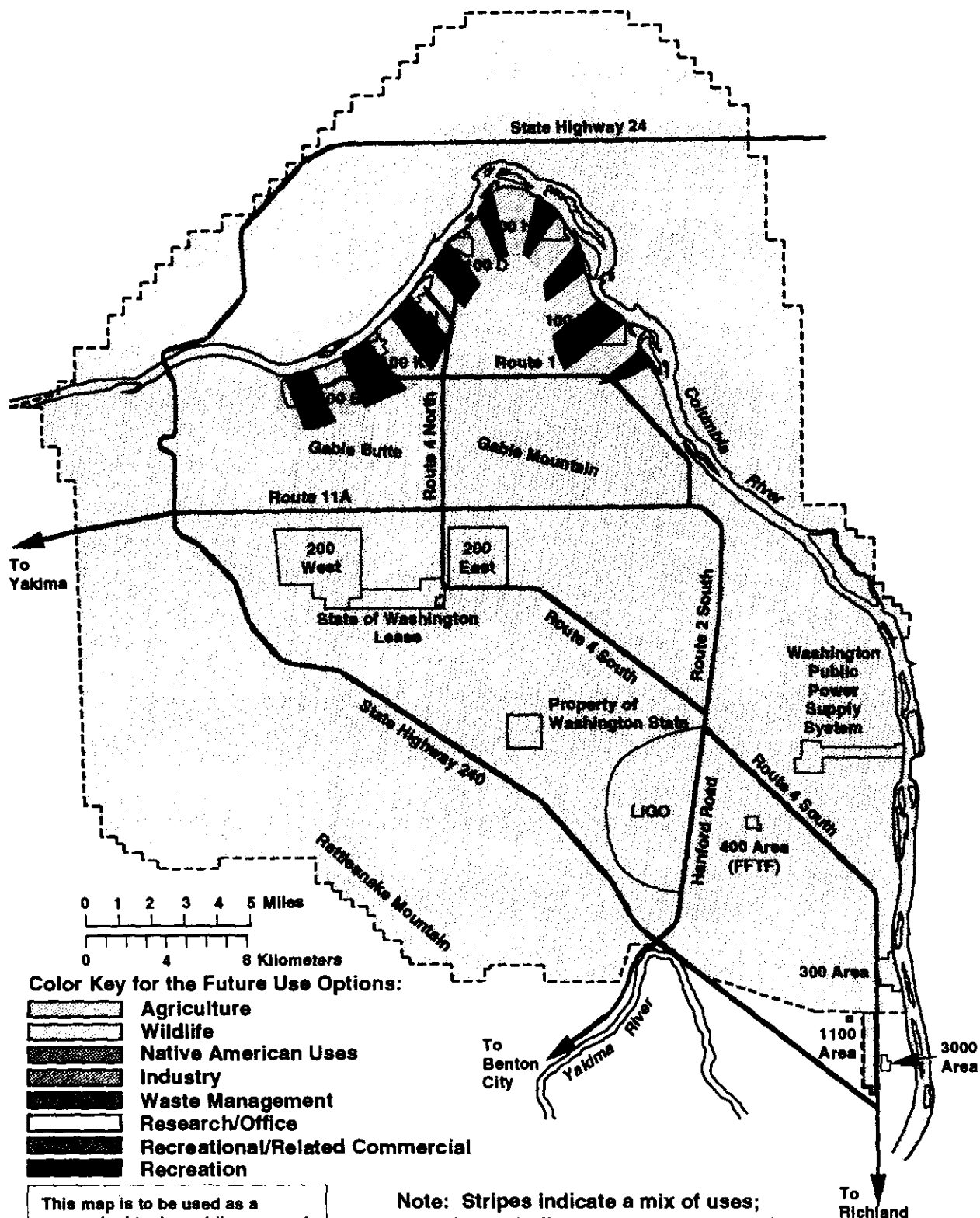
OPTION 3: B Reactor as Museum/Visitor Center



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

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OPTION 4: Wildlife and Recreation



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/ROR-4

Cleanup Scenarios

Three cleanup scenarios were developed for the Reactors on the River (100 Area - NPL Site). All three cleanup scenarios have as their ultimate goal cleaning up groundwater to an "unrestricted" status because of the threat that groundwater contamination poses to the River.

- (A) *Cleanup Scenario A: All Unrestricted*
This scenario calls for removal of all reactors and all other structures, contaminated and uncontaminated, in the 100 Area. The reactors would be moved to the 200 Area for disposal. The air, surface, subsurface and groundwater would be cleaned up to "unrestricted" status for the entire area.

Future Uses Enabled by Cleanup Scenario A

- (A) Option 1: Native American Uses
Option 4: Wildlife and Recreation
- 1 4

Timing and Importance

Because of the current use of the Columbia River as a source of water for drinking and irrigation downstream, of public access to the River, and of proposed future uses, cleaning up flows of contaminated water into the Columbia River is an immediate priority. The following specific areas were identified as most important for cleanup:

- N reactor area with associated springs and seeps,
- K Basins
- Groundwater contamination into the River

These contaminated liquids are a higher priority for cleanup than the reactor buildings and contaminated support structures which do not pose an immediate risk to the River. Removing uncontaminated support structures and facilities is a lower priority than removing contaminated structures.

- (B) *Cleanup Scenario B: Clean Enough for Limited Recreation, Commercial Uses and Wildlife*

Reactors along the river would remain in place. Portions of this geographic area that are currently uncontaminated would be available for "unrestricted" use. Areas where commercial and recreational activities would occur would be cleaned up to "unrestricted" status. Areas managed for wildlife and habitat would be cleaned up to "restricted" status. Contaminated groundwater would be cleaned up to "unrestricted" status because of the threat it poses to the River.

Future Use Options Enabled by Cleanup Scenario B

- ⓑ Option 2: Limited Recreation, Commercial Uses and Wildlife
24 Option 4: Wildlife and Recreation

Timing and Importance

Because of the current use of the Columbia River as a source of water for drinking and irrigation downstream, of public access to the River, and of proposed future uses, cleaning up flows of contaminated water into the Columbia River in this area is an immediate priority. The following specific areas were identified as most important for cleanup:

- N reactor area with associated springs and seeps
- K Basins
- Groundwater contamination flowing into the River

By 2018, the Working Group assumed that all surface areas, except the reactors, would be cleaned up. The reactors would be expected to be clean in the "foreseeable future." Cleaning up the reactors is less important than addressing contaminants reaching the river.

ⓒ *Cleanup Scenario C: B Reactor Remains in Place*

This scenario calls for removal of all reactors and contaminated structures to the 200 Area except for the B Reactor which would remain in place. Except for the B Reactor itself, the surface, subsurface and groundwater of the area would be cleaned up to "unrestricted" status. The B Reactor itself would be "restricted."

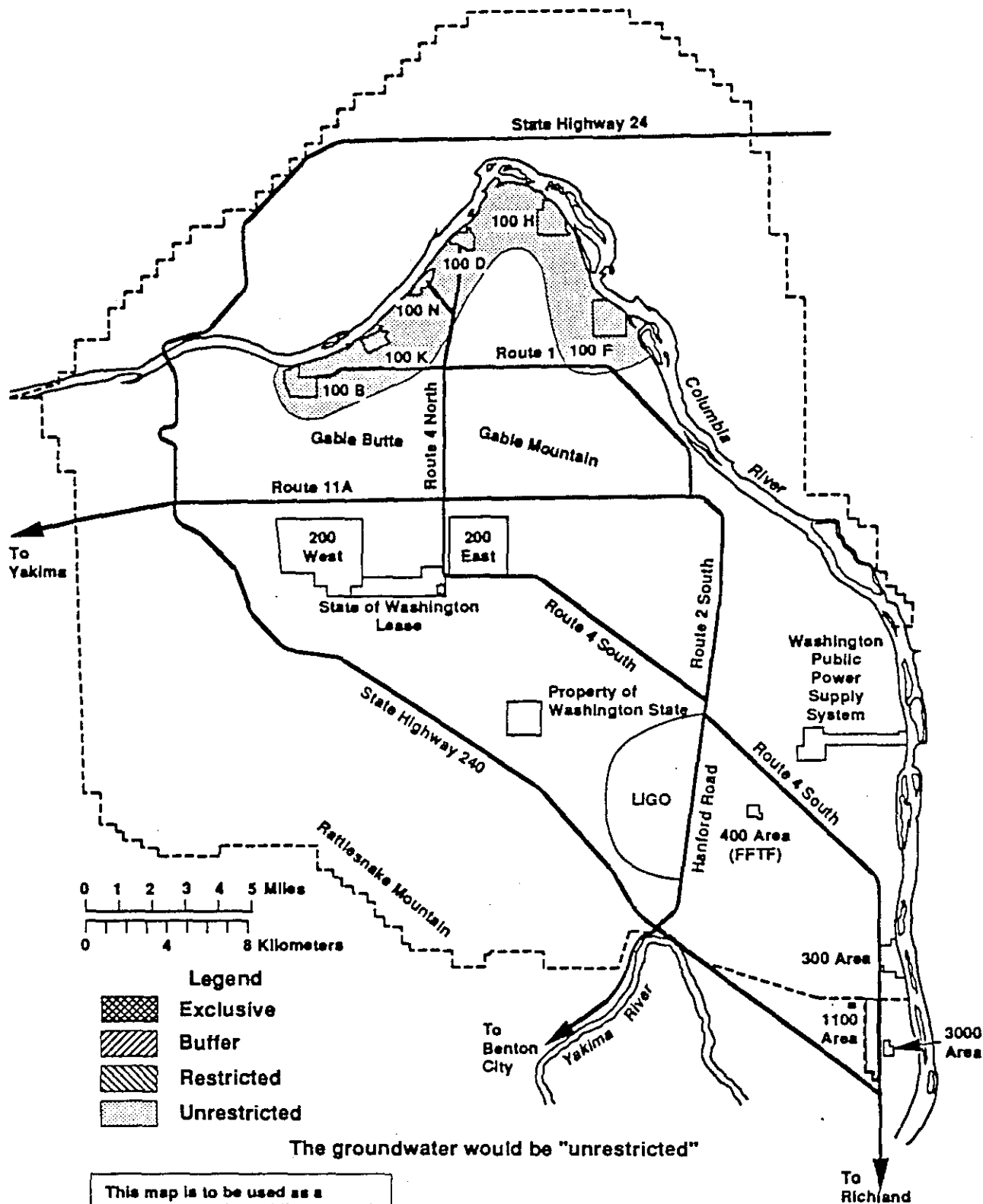
Future Use Options Enabled by Cleanup Scenario B

- ⓒ Option 3: B Reactor as a Museum/Visitor Center
34 Option 4: Wildlife and Recreation

Hanford Future Site Uses Working Group Basemap

Reactors on the River (100 Area - NPL Site)

Cleanup Scenario A: All "Unrestricted"



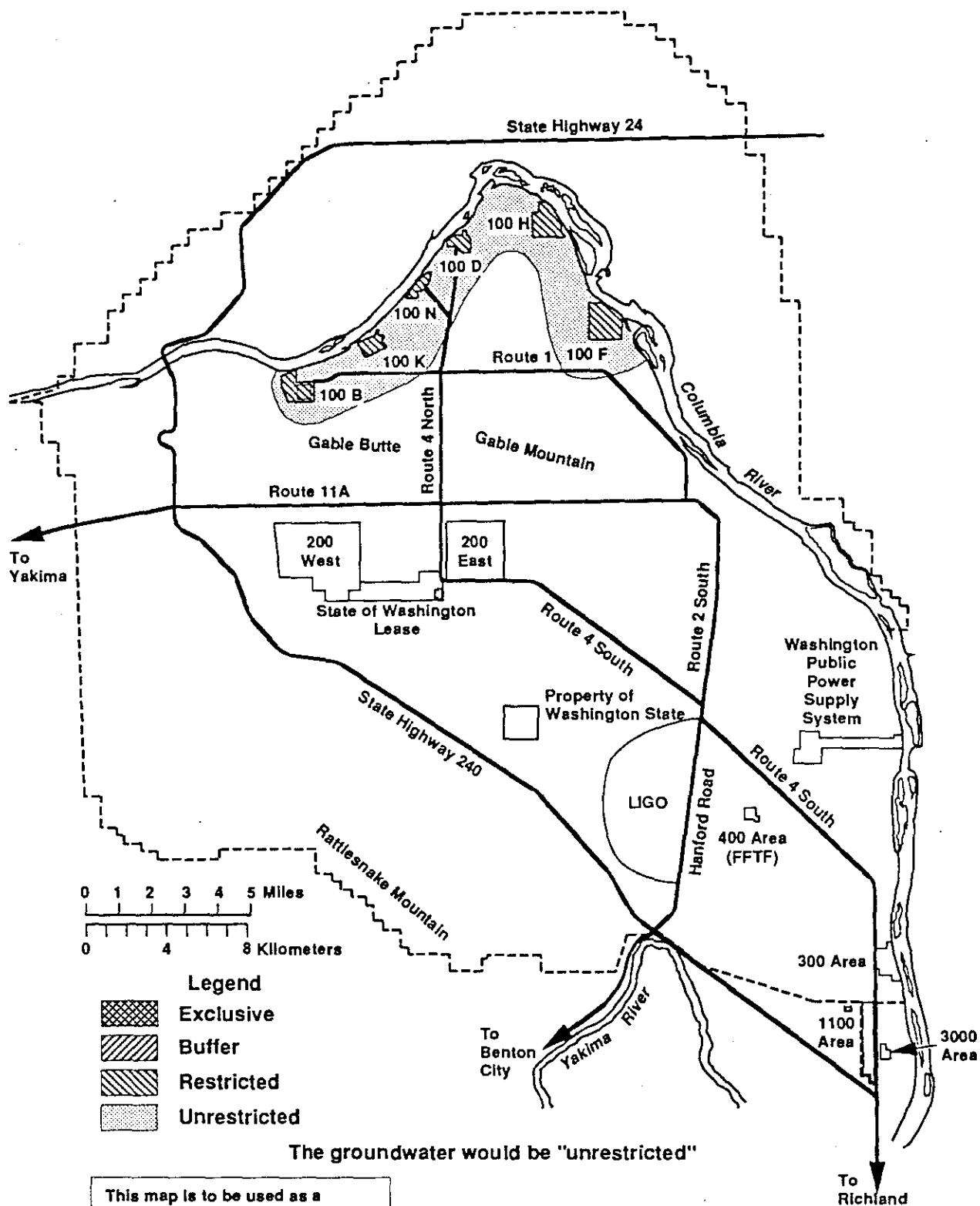
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/ROR-A

Hanford Future Site Uses Working Group Basemap

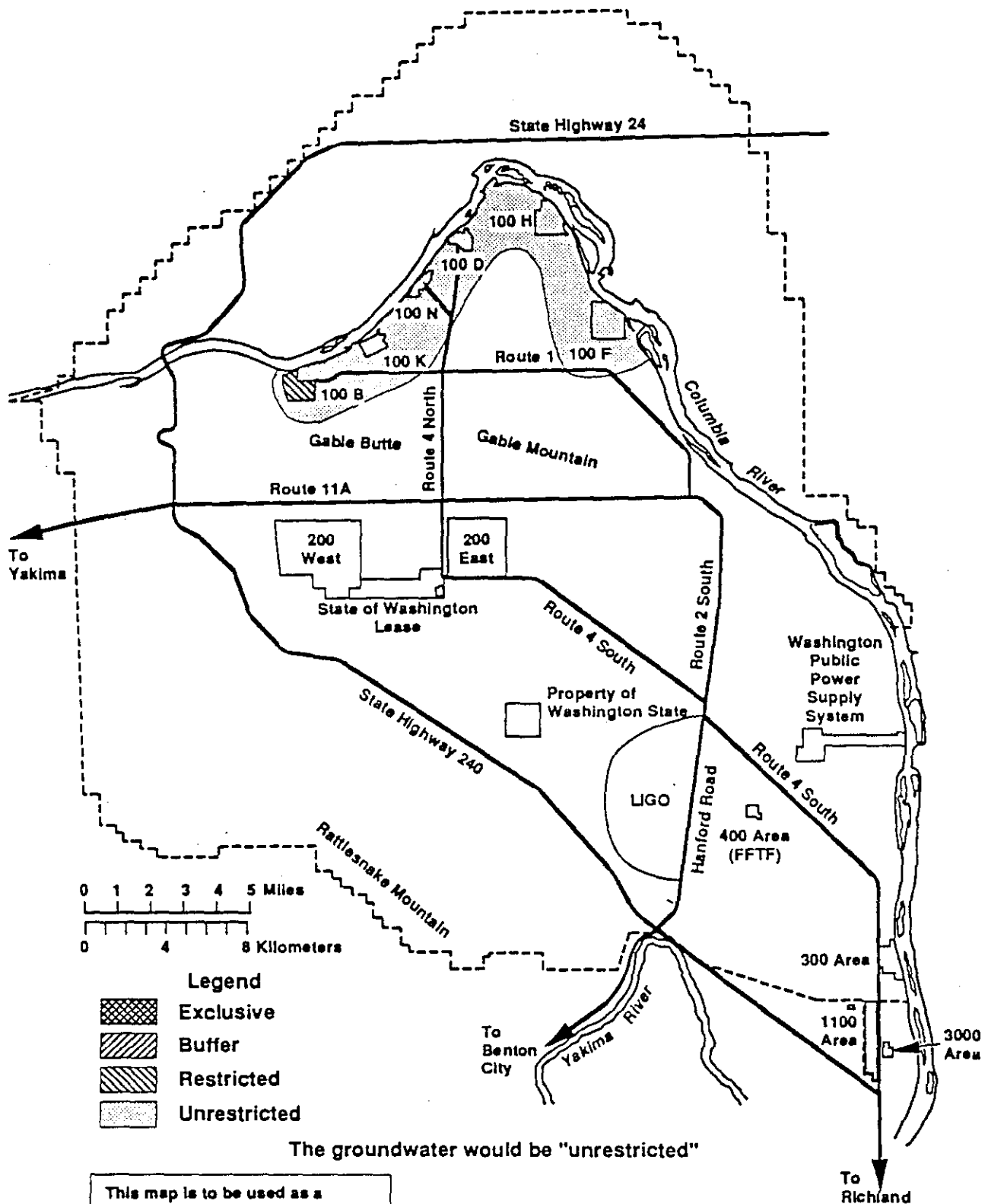
Reactors on the River (100 Area - NPL Site)

Cleanup Scenario B: Clean Enough for Limited Recreation,
Commercial Uses, and Wildlife



Hanford Future Site Uses Working Group Basemap

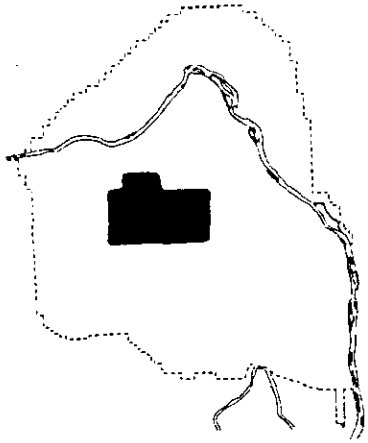
Reactors on the River (100 Area - NPL Site)
Cleanup Scenario C: B Reactor Remains in Place



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/ROR-C

CENTRAL PLATEAU



Description: The Central Plateau is at the center of the Hanford site and encompasses 9.4 square miles (or approximately 6,000 acres) of land. This geographic area encompasses all of the 200 East and West areas, the land between these areas, and extends to the north to include an area informally known as the 200 North area. The Central Plateau has been heavily used for fuel reprocessing and waste management and disposal activities. The Central Plateau is the most heavily contaminated of the six geographic areas. Most of the contamination and stored wastes on the Hanford site are within the boundaries of this

area. A great deal of the stored wastes are contained in 149 single- and 28 double-shell tanks. At least sixty-eight of the single-shell tanks are known to be leaking or have leaked into the soil beneath the tanks.

Information Points about the Central Plateau

Natural Features

- Even a probable maximum flood is not expected to inundate facilities in this area
- Threatened and endangered species

Cultural Aspects

- Native American site-wide treaty rights -- hunting, fishing, food gathering

Land Uses

- Fuel reprocessing and waste processing management and disposal activities
- Strontium and cesium capsule storage
- Waste tanks -- 149 single-shell, 28 double-shell
- Buried solid waste
- Irradiated fuel storage
- Low-level radioactive waste disposal site for off-site commercial waste within the WA State lease area, operated by US Ecology, Inc.
- Ongoing decontamination and decommissioning activities

Economic Considerations and Contributions

- Waste management focus
- Infrastructure
- Current employment -- 4629
- Hazardous waste treatment and disposal

Contamination

- Groundwater contamination plumes emanating from the Central Plateau underlie approximately 200 square miles - major contaminants include:

CHAPTER 2 Geographic Areas

- Nitrates, sodium dichromate, carbon tetrachloride, ferrocyanide, uranium, technetium-99, and tritium
- Groundwater contamination above EPA drinking water standards
- Sources of contamination include liquid discharges to the ground and buried solids.
- Leaks known from at least 68 of 149 single-shell tanks
- Surface contamination of 265 acres
- Forty-three of 72 source operable units
- More than 80% of the total key radionuclides on the Hanford site estimated to be in the 200 Area

Decisions

- Submarine reactor compartments -- 1984
- Strontium Semiworks decommissioning -- 1984
- Hanford Defense Waste EIS -- 1987
- Reactor Decommissioning EIS -- pending
- Expedited response action for carbon tetrachloride plume -- current
- Tri-Party Agreement: RCRA permit & Superfund actions
- Hanford Remedial Action EIS -- future
- Northwest Low Level Radioactive Waste Compact

Findings and Recommendations

The Central Plateau is unique among the geographic areas in its level of contamination.

Some type of government presence or oversight of the area should be assumed for the foreseeable future due to the anticipated level of residual contamination in the 200 Area.

Waste from throughout the Hanford site should be concentrated in the 200 Area; thus wastes would be moving into the 200 Area from across the site.

Waste management, storage and disposal activities in the 200 Area and immediate vicinity should be concentrated within the 200 Area whenever feasible to minimize the amount of land devoted to or contaminated by waste management activities. When bringing wastes to the area, adverse effects should be minimized, especially to currently uncontaminated areas of the Central Plateau.

Wastes generated in or coming to the 200 Area from the rest of the site will not necessarily be permanently disposed of in the 200 Area. Off-site shipments are occurring now and might continue for some wastes. Also, new technologies may be applied to wastes at a later date.

Waste and contaminants within the 200 Area should be treated and managed to prevent migration from the 200 Area to other areas and/or off site. Waste streams resulting from treatment or other activities should not further contaminate or spread contaminants

throughout and/or off the site.

Based on the risk emanating from the contaminants and waste management activities in the Central Plateau, a "buffer" zone around the borders of these contaminants and waste management activities should be established to minimize exposure.

The Group acknowledges the existing obligations at the Hanford site to dispose of submarine reactor compartments and commercial LLW (in accordance with the Northwest Low-Level Radioactive Waste Compact) at the US Ecology site on the state-leased lands in this area. Fulfillment of these obligations is assumed when considering other future use options for the Central Plateau.

Access to the "exclusive" areas, including "exclusive" "buffers," would be restricted to personnel who were properly trained and monitored for working under these conditions and exposures.

Future Use Options

In general, the Working Group desires that the overall cleanup criteria for the Central Plateau should enable general usage of the land and groundwater for other than waste management activities in the horizon of 100 years from the decommissioning of waste management facilities and closure of waste disposal areas. For the foreseeable future, the Working Group developed six future use options.* These options distinguish different types of waste and different types of waste management or commercial activities which could occur in the Central Plateau. They are distinguished by three major criteria: type of waste; methods of treatment or disposal; and length of time for waste storage.

DOE wastes are generated by DOE-related nuclear facilities. These wastes could be either low-level radioactive waste (LLW), transuranic waste (TRU), high-level radioactive waste (HLW), or non-radioactive hazardous wastes. The use options distinguish *DOE on-site wastes*, those generated at the Hanford site, from *DOE off-site wastes*, those imported from other DOE sites. The second broad category or type of waste is **commercial waste**, which is waste generated by non-DOE related facilities. Such waste could be managed at Hanford, assuming appropriate commercial operations were located there, and if a future use option allowed waste importation. For purposes of these options, these wastes include LLW, non-radioactive hazardous waste, and spent fuel from commercial nuclear power reactors.

These options also distinguish **treatment**, which includes a broad range of methods designed to change the character or composition of a waste (including physical and chemical treatments, thermal treatments, incineration, and others), from **disposal** which refers to placing waste into or on the land (e.g., landfilling) without an intent to treat it or eventually

* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. They are not in priority order.

remove it.

Finally, the future use options also distinguish between "long-term" storage and "short-term" storage and treatment which takes advantage of treatment facilities located at the Hanford site. For purposes of this report, short term storage would occur only prior to treatment, and residuals of treatment would be disposed of off-site as soon as possible after treatment. When defining short-term storage and treatment, the Group assumed no more than one year of storage before treatment and no more than one year before off-site disposal of residuals.

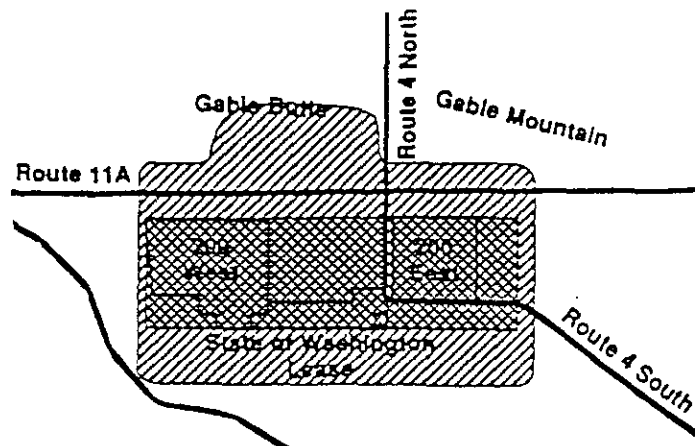
Options 1 through 5 focus on waste management activities. They differ in the type of waste that would be accepted into the Central Plateau and the type of waste management (e.g., treatment, storage, or disposal) that would be conducted. It is assumed that any future importation of waste must be consistent with state and federal law. These options are arrayed in a sequence, with Option 1 being the most restrictive of the type of waste and waste management activities that would occur and Option 5 being the least restrictive. Option 6 would allow any combination of the waste management possibilities contemplated by Options 1 through 5 (although Option 6 is not dependent on any of these other options). It would *also* provide for compatible commercial or industrial activities, whether or not such activities were directly related to waste management.

1 *Option 1: Hanford on-site waste and existing obligations for disposal.*

This future use option would designate the interior portion of the Central Plateau for waste management activities. The waste management area would encompass the "squared off" boundaries of the current 200 Area (expanded to include the area to the east of the 200 East area where grout vaults are planned to be located). Wastes that would be managed would be DOE on-site waste and off-site wastes for which there are existing obligations for disposal (commercial low level waste and submarine reactor compartments). In regard to DOE on-site waste, this option contemplates treatment for any radioactive or hazardous waste and long-term storage of transuranic and/or high-level waste until the transuranic and high level waste can be moved to a permanent repository. This option distinguishes between disposal of DOE on-site LLW and mixed waste, which is waste with radionuclides and hazardous waste. (The Tri-Party Agreement authorizes disposal of some mixed waste; however, there was a champion within the Group to see a cleanup analysis in the HRA EIS which did not require disposal of mixed waste at Hanford.) In accordance with the findings and recommendations, access to the waste management area would be restricted to waste management personnel who were properly trained and monitored for working with the types of wastes contemplated under this option.

The remainder of the Central Plateau, including the 200 North area, that encircles the waste management area would be designated a "buffer" area to reduce the risks that are expected to continue to emanate from the waste management area.

CHAPTER 2 Geographic Areas



- 2** Option 2: *Same as Option 1 with the addition of off-site DOE waste for treatment only.*
This option is identical to Option 1 except that treatment* of DOE off-site wastes (radioactive or hazardous) would be an additional possible use of the waste management area.
- 3** Option 3: *Same as Option 2 with the addition of off-site commercial hazardous waste for treatment only.*
This option is identical to Option 2 except that treatment* of commercial hazardous waste would be an additional possible use of the waste management area.
- 4** Option 4: *Same as Option 3 with the addition of off-site DOE TRU and HLW for long term storage, and off-site DOE LLW for disposal.*
This option is identical to Option 3 except that long-term storage of off-site DOE transuranic and high level waste, and disposal of off-site DOE low level waste could occur within the waste management area.

* Such treatment could include associated short-term storage of waste. Storage would be only prior to treatment, and residuals of treatment would be disposed of off-site as soon as possible after treatment. The Group assumed no more than one year of storage before treatment and no more than one year before off-site disposal of residuals.

- 5** Option 5: *Same as Option 4 with the addition of commercial spent reactor fuel for long-term monitored retrievable storage.**
This option is identical to Option 4, except that long-term monitored retrievable storage of commercial spent reactor fuel could occur within the waste management area. There were champions within the Working Group for two variants of this option. Option 5A would permit the importation of commercial spent fuel from reactors in the Pacific Northwest states only. Option 5B would allow importation of commercial spent fuel from reactors nationwide.
- 6** Option 6: *Same as Options 1 - 5 with the addition of compatible commercial or industrial activity.*
This option would encompass any of the waste management activities that are contemplated in Options 1 through 5 and would permit use of the waste management area for commercial or industrial activity that was compatible with these waste management operations. Potential uses would be those that benefit from similar infrastructure and institutional controls, such as security, badging, fences, and monitoring. In accordance with the findings and recommendations, access to the waste management areas for these commercial activities would also be restricted to personnel who were properly trained and monitored for working with the types of materials and wastes that would be present under this option.

In light of the differences in these options and of their impact on the future land uses and perceptions of the Hanford Site, the Working Group spent considerable time considering these options. Essentially, the Working Group believed that the tools necessary to conduct Hanford's cleanup must be available if the cleanup is to succeed. This is the basis for Option 1. These tools might, then, make Hanford amenable for the treatment of some other DOE wastes (Option 2) or even some commercial wastes (Option 3). It might also be possible to designate Hanford as a waste storage location, either for DOE wastes (Option 4) or commercial spent fuel from regional reactors (Option 5A) or nation-wide (Option 5B). Finally, the development of some or all of this waste management infrastructure could make it possible to co-locate commercial/industrial activity that is compatible with, though not necessarily in, the waste management business (Option 6). The views of the Working Group members on any of these options are often held deeply and they are diverse. Any future use option selected for the Central Plateau should be evaluated in light of all of the Working Group's findings and recommendations.

Figure 1 that follows summarizes the types of materials and/or waste that could be managed on the Central Plateau under these six future use options.

* The Working Group discussed the possible implications of commercial spent fuel management by a Monitored Retrievable Storage (MRS) system at Hanford and how it may be in variance with the Group's overall desire to keep the focus on cleanup and the Working Group's recommendations about how the conduct of the cleanup should occur. However, there was a champion in the Working Group for this possible future use option, so it is included in this array of options.

--- Figure 1 ---
OPTIONS FOR ACCESS TO THE HANFORD SITE CENTRAL PLATEAU

TYPES OF WASTES		ACCEPTABLE PRACTICES					
		OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6
DOE ON-SITE WASTES							
Treatment* - Radioactive and hazardous		✓	✓	✓	✓	✓	✓
Disposal	LLW	1A ✓	✓	✓	✓	✓	✓
	LLW and mixed waste		1B ✓				
Long-term storage - TRU/HLW		✓	✓	✓	✓	✓	✓
DOE OFF-SITE WASTES							
Treatment (including assoc. short-term storage)** - Radioactive and hazardous			✓	✓	✓	✓	✓
Disposal based on existing obligations (submarine reactor compartments)		✓	✓	✓	✓	✓	✓
Long-term storage (TRU-HLW) and disposal (LLW)					✓	✓	✓
COMMERCIAL RADIOACTIVE WASTES							
Disposal (LLW)		✓	✓	✓	✓	✓	✓
Monitored Retrievable Storage - Commercial spent fuel (Pacific NW only)						5A ✓	✓
Monitored Retrievable Storage - Commercial spent fuel (Nationwide)							5B ✓
COMMERCIAL HAZARDOUS WASTES							
Treatment (including assoc. short-term storage).				✓	✓	✓	✓
COMPATIBLE COMMERCIAL/ INDUSTRIAL ACTIVITIES		***	***	***	***		✓

* "Treatment" includes a broad range of methods designed to change the character or composition of a waste, including physical and chemical treatments, thermal treatments including incineration, and others.

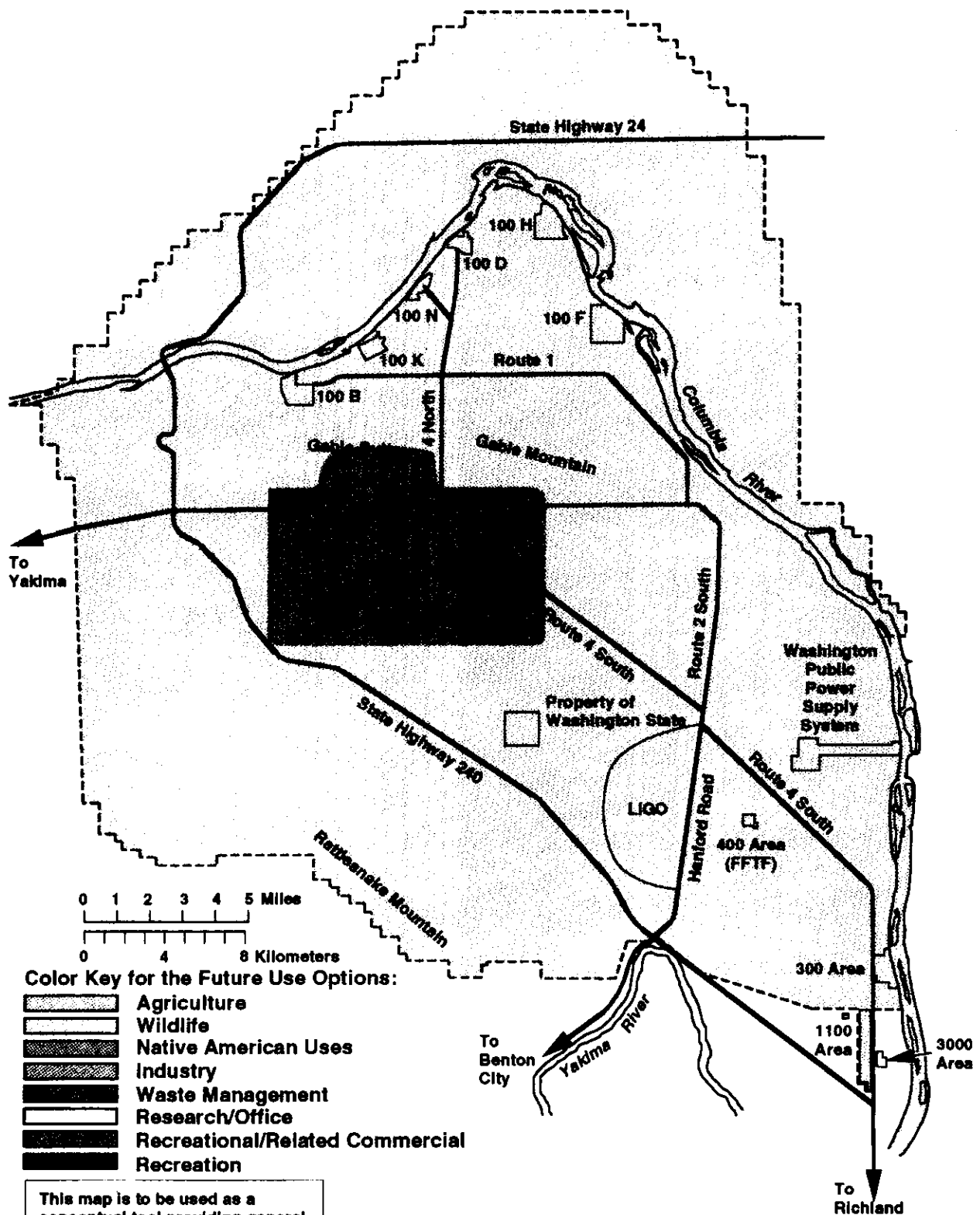
** Storage would be only prior to treatment, and residuals of treatment would be disposed of off-site.

*** "Compatible Commercial/Industrial Activities" would become "Acceptable Practices" under Options 1-4 when wastes stored, treated or disposed of in the 200 Areas posed no health or safety risks to such industrial activities' workforces (even pending the end of public access restrictions), with priority given in land decisions to management and treatment of Hanford wastes.

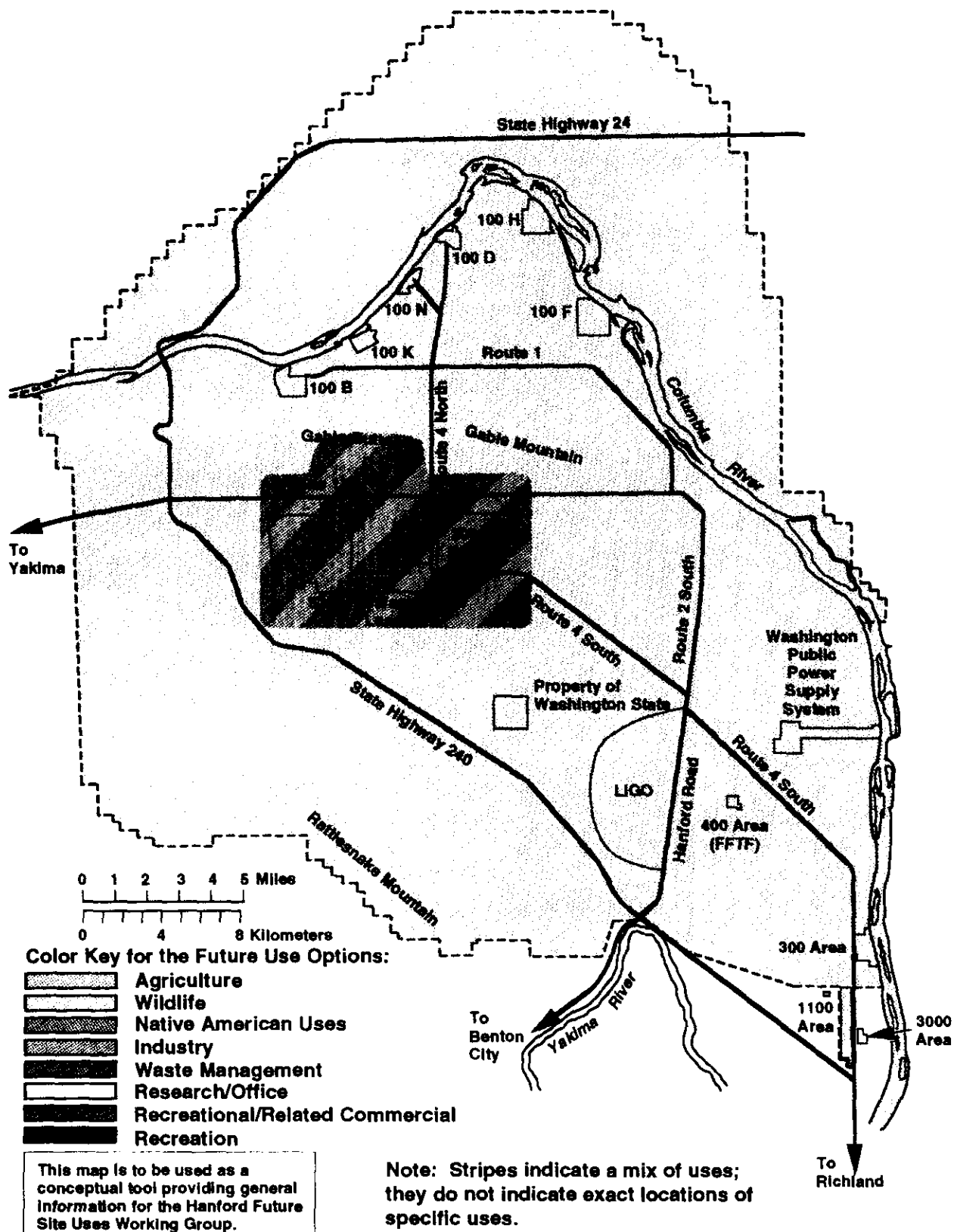
CHAPTER 2 Geographic Areas

- OPTION 1: Hanford on-site waste and existing obligations for disposal
- OPTION 2: Option 1 with the addition of off-site DOE waste for treatment only
- OPTION 3: Option 2 with the addition of off-site commercial waste for treatment only
- OPTION 4: Option 3 with the addition of off-site DOE waste: long term storage of TRU and HLW, and disposal of LLW
- OPTION 5: Option 4 with the addition of commercial spent fuel for long term monitored retrievable storage.
- OPTION 6: Option 5 with the addition of compatible commercial or industrial activity.

OPTIONS 1-5: Waste Management



OPTION 6: Waste Management and Compatible Commercial, or Industrial Uses



ERE/CP-6

Cleanup Scenario A: Exclusive with buffer

- (A) The Working Group identified a single cleanup scenario for the Central Plateau. This scenario assumes that future uses of the surface, subsurface and groundwater in and immediately surrounding the "200 West and 200 East" areas would be "exclusive." This "exclusive" waste management area would encompass the "squared off" boundaries of the current 200 Area (expanded to include the area to the east of the 200 East area where grout vaults are planned to be located).

Surrounding the exclusive area would be a temporary surface and subsurface exclusive "buffer"* zone composed of at least the rest of the Central Plateau including the "200 North" area extending north to the base of Gable Butte. The "buffer" zone is to reduce the risks that are expected to continue to emanate from the 200 Area. Environmental restoration, but not waste management, activities would occur in the "buffer" in order to clean up existing contamination in the "buffer" zone itself.

For the "exclusive" zone, the cleanup target is to reduce risk outside the "exclusive" zone sufficient to minimize the size of the "buffer" zone or other restrictions posed by contaminants coming from the 200 Area. The cleanup target for the "buffer" zone is to remediate and restore the area (where contaminated) to be available ultimately for "unrestricted" use. As the risks from waste management activities decrease, it is expected that the "buffer" zone would shrink commensurately. The actual size of the "buffer" zone would be established based on conventional risk management practices, and should be periodically reassessed to reflect current risks.

Groundwater: There is existing groundwater contamination under the Central Plateau as well as in groundwater plumes extending from the 200 Area throughout some other parts of the site. Some of this contaminated groundwater is discharging into the Columbia River, while other contamination is currently confined to the vicinity of the 200 Area. This scenario assumes that efforts will be made to prevent the spread of groundwater contamination to other parts of the site.

Future Use Options Enabled by Cleanup Scenario A

Option 1: Hanford on-site waste and existing obligations for disposal

Option 2: Option 1 with the addition of off-site DOE waste for treatment only

Option 3: Option 2 with the addition of off-site commercial waste for treatment only

*The Working Group has depicted a "buffer" zone on the map for this cleanup scenario. This zone was not prepared on the basis of any technical analysis of risk. The actual "buffer" zone developed would need such an analysis prior to implementation; its size would depend on which future use option was chosen.



Option 4: Option 3 with the addition of off-site DOE waste: long term storage of TRU and HLW, and disposal of LLW

Option 5: Option 4 with the addition of commercial spent reactor fuel for long term monitored retrievable storage.

Option 6: Option 5 with the addition of compatible commercial or industrial activity.

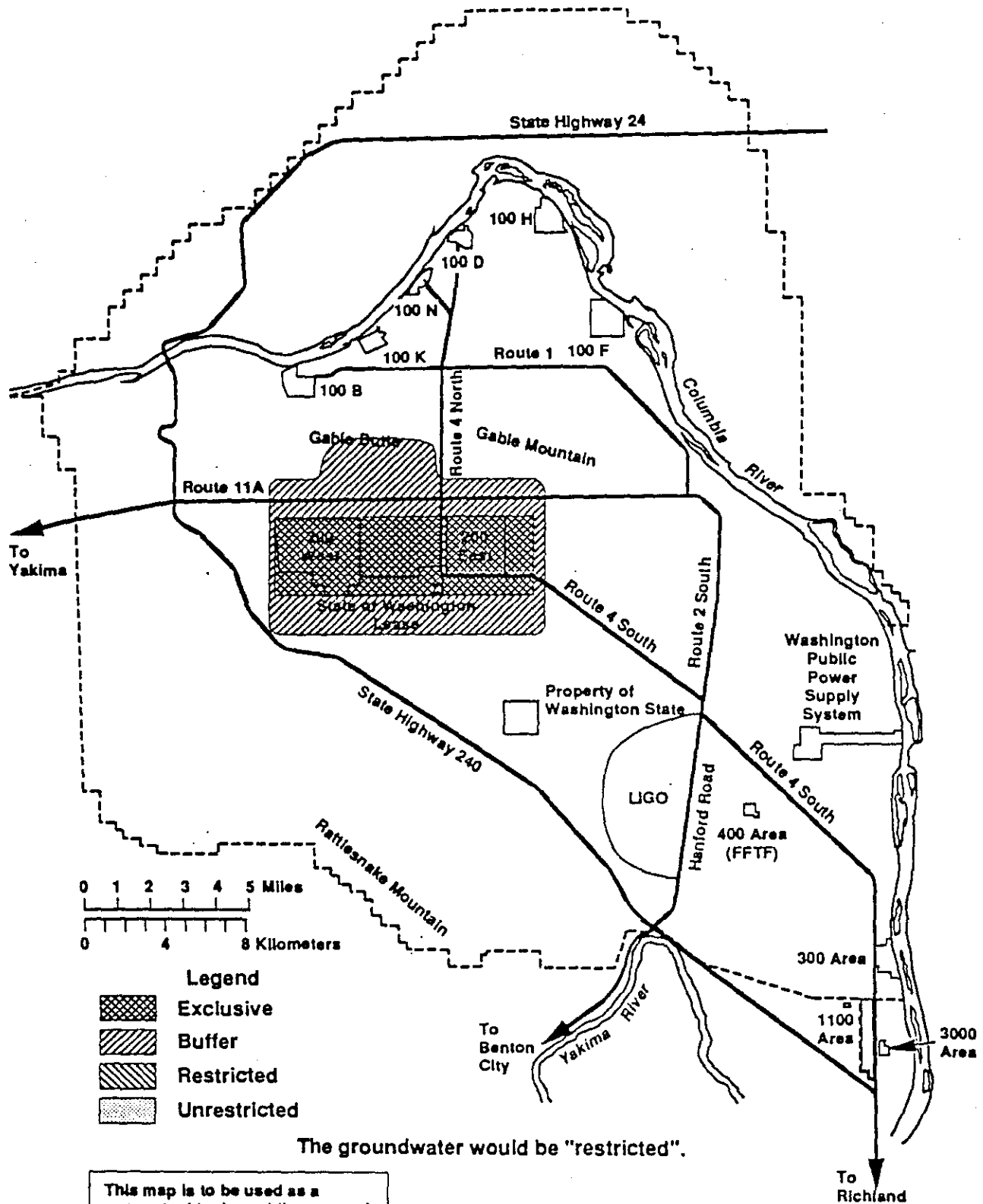
Timing and Importance

Preventing groundwater contamination in the 200 Area from migrating to other areas on the site and addressing risks associated with the tanks were identified as having the greatest importance for cleanup in this area. While there may be some "islands" within the 200 Area that can and should be cleaned up quickly, especially if necessary to minimize the migration of contamination, the waste management area designated as "exclusive" (though not necessarily the buffer zone), would remain "exclusive" for the foreseeable future. It is the desire of the Working Group that ultimately, depending on technical capabilities, the Central Plateau would be clean enough for future uses other than waste management activities.

Hanford Future Site Uses Working Group Basemap

Central Plateau

Cleanup Scenario A: "Exclusive" with Buffer



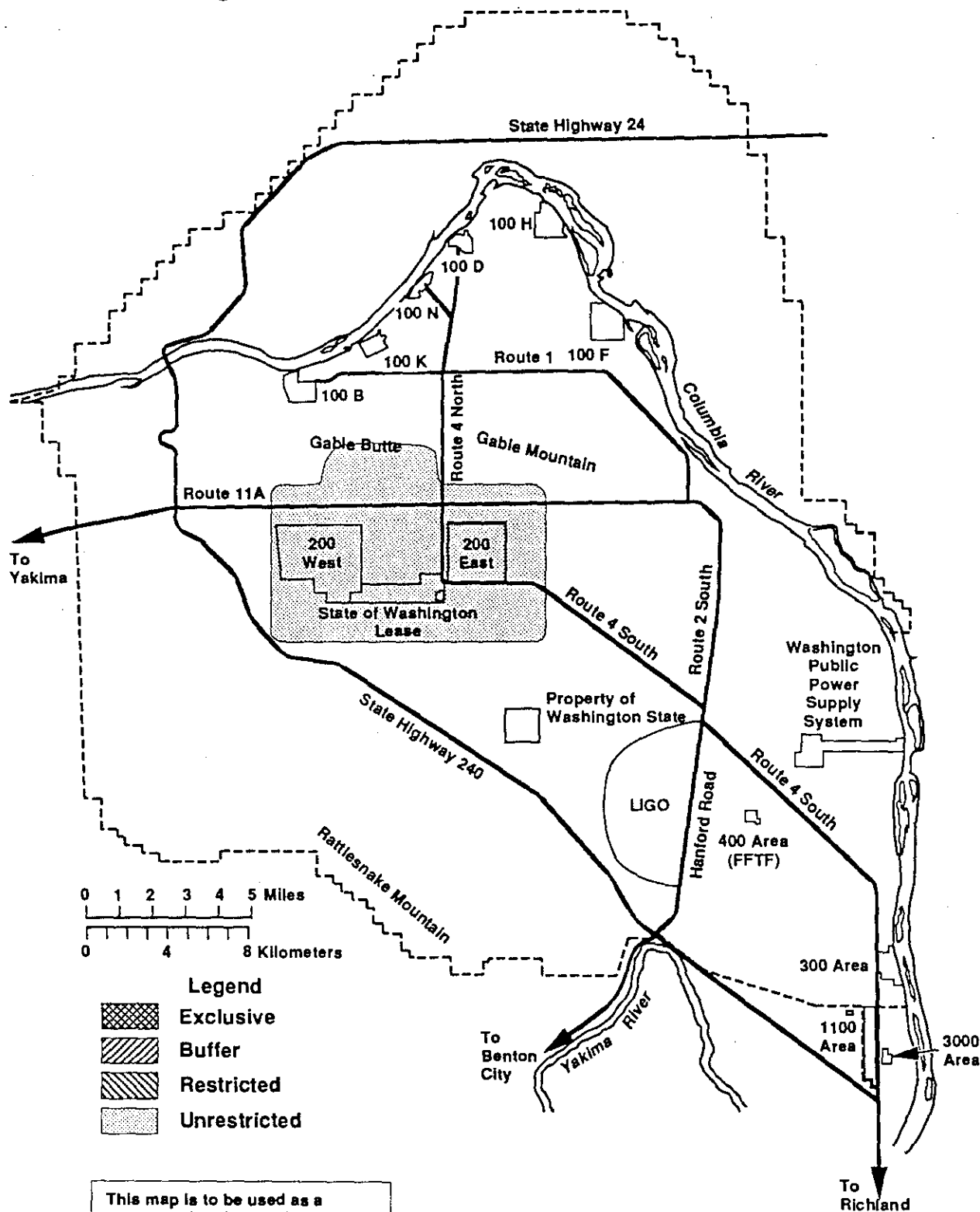
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/CP-A

Hanford Future Site Uses Working Group Basemap

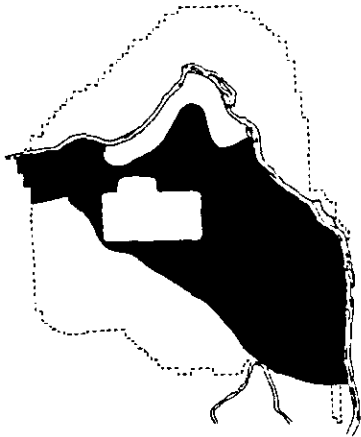
Central Plateau

Cleanup Horizon: General Usage 100 Years after Decommissioning of Waste Management Facilities and Closure of Waste Disposal Areas



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/CP-B



ALL OTHER AREAS

Description: All Other Areas includes all portions of the Hanford site that are not included in the five other geographic areas. It is the largest of the geographic areas, encompassing about 242 square miles (or approximately 155,000 acres) of land. All Other Areas contains the developed sections of the site outside of the 100 and 200 Areas and the ALE Reserve. These include 300, 400, 1100 Areas (which house research and development facilities, former fuel fabrication facilities, physical plants, and the Fast Flux Test Facility), a section of land currently owned by Washington State, and the Washington Public Power Supply System (WPPSS) facilities. Construction of the Laser Interferometer Gravitational Wave Observatory (LIGO) is expected to begin in 1993. Additional facilities are in the planning or design stage: Environmental and Molecular Sciences Laboratory (EMSL), Superconducting Magnetic Energy Storage - Engineering Test Model (SMES-ETM), and Hazardous Materials Management Emergency Response Training Center (HAMMER).

This area contains large tracts of undeveloped land between the developed sections listed above. Distinctive features of this area include Gable Mountain and Gable Butte and other sites of cultural and religious significance to Native Americans, natural features such as sand dunes to the east, and many threatened or endangered species of plants and animals. As on the rest of the site, the Nature Conservancy will be coordinating with DOE the task of inventorying the multitude of plant and animal species which inhabit the undeveloped areas of the site. Interspersed amongst the large tracts of undeveloped land, there are many contaminated sites, as well as contamination in the developed 300 and 1100 Areas. Groundwater contamination in the 300 Area has been reaching the River for a number of years.

Information Points about All Other Areas

Natural Features

- Gable Mountain and Gable Butte
- Sand dunes in SE sector of site
- Threatened and endangered plants and animals, other species thriving
- Large areas of relatively undisturbed habitat

Cultural Aspects

- Archaeological sites
- Native American sites:
Gable Mountain and Gable Butte -- religious sites
Burial sites

CHAPTER 2 Geographic Areas

Winter village sites

Traditional food gathering sites

- Native American site-wide treaty rights -- hunting, fishing, food gathering
- Hanford town site

Land Uses

- WA state-owned section (title transferred in 1970's)
- Bonneville Power Administration substations
- Research and development facilities
- Fuel fabrication
- Physical plants
- WPPSS
- FFTF - currently in standby
- Hot Cell Analytical Laboratory
- Solid waste disposal

Economic Considerations and Contributions

- Infrastructure -- roads, railroads, powerlines, security, telephone lines
- Current employment -- more than 10, 000
- Logistics support for other areas
- WPPSS
- Research and development of new environmental remediation technologies
- Arable land
- Native plant and animal communities

Contamination

- Groundwater contamination from uranium, nitrate, trichloroethylene
- Groundwater contamination also moving in from other sites (tritium, nitrate)
- 9 of 72 source operable units (5 in 300 Area, 4 in 1100 Area)
- Low-level radioactive/hazardous liquid waste disposal sites
- Landfills and septic tanks
- Continuing investigation may lead to discovery of other contamination and new operable unit designations

Decisions

- FFTF - currently in standby
- Laser Interferometer Gravitational-Wave Observatory (LIGO) construction to begin in 1993
- Tri-Party Agreement: RCRA permit & Superfund actions
- Expedited Response Actions:
 - 300 Area uranium plume (soil removed, groundwater to be addressed) & 300 Area hexone drum burial (drums removed to 200 Area)
 - Initial work underway for a major expedited response Action near the WPPSS reactor to remove a transuranic waste burial ground
 - Removal work underway at Riverland Rail Wash Station, west of the 200 Area along Highway 240, to create a large tract of uncontaminated land.

Findings and Recommendations

The future of Hanford is important to the overall health and prosperity not only of the Tri-Cities region but also of the state of Washington and the entire Pacific Northwest.

For the past 50 years, the Hanford site has dominated the economy of the greater Tri-Cities area, providing a significant portion of jobs, especially higher-wage jobs.

There appear to be significant areas of land in "All Other Areas" that are not contaminated. All such uncontaminated areas should be classified "unrestricted" and should not be used for waste management activities, treatment, storage or disposal.

Washington State's square mile, which is authorized to dispose extremely hazardous waste, is presently uncontaminated and the Group would like this area to remain uncontaminated. It recommends that the State pursue removing existing deed restrictions so it can be developed for future uses consistent with those identified in this report.

Future use options defined for "All Other Areas" assume no migration of contaminants from the Central Plateau/200 Area, except for existing groundwater plumes until they are cleaned up.

This area of the Hanford site contains significant pristine and "returning" habitat areas for native plant and animal species. Undisturbed areas between existing facilities provide corridors for wildlife to move through the site and to access the River.

The focus of efforts for the cleanup should be to clean up contaminated areas and, once clean, to ensure that they remain so.

Where activities to clean up surface or groundwater contamination would threaten wildlife species and/or habitat, the benefits should be compared to the potential harm to wildlife or habitat. The guiding principle in decisions about cleanup activities should be "do no harm."

Cleanup priorities should consider the needs of the local community: large areas that are highly desirable for economic development should be cleaned up early in the process. For example, cleaning up the areas closest to Richland should be a high priority.

Large areas that can be cleaned up relatively easily and quickly, at low cost, such as the area between ALE Reserve and the River, west of Highway 240, should be a high priority for early cleanup.

The largest groundwater contaminant plume at Hanford (tritium and nitrate) originates in the 200 Area and extends in a southeasterly direction to the River. Therefore, this plume underlies a significant percentage of "All Other Areas."

Future Use Options

Four future use options were proposed.* The first two future use options subdivide the geographic area into three parts: a southeast portion close to Richland, a mid section, and a northern section. Differences between these two future use options occur primarily in the mid section, as described below. The third option identifies Native American uses. The fourth future use option, from the standpoint of contamination, would be able to occur anywhere outside the 300 Area where industrial use is assumed.

1 *Option 1: Focus on Economic Development*

The southeast portion of the area would permit all general urban uses, except for residential. Industrial uses, only, would be located in the 300 Area. Research, industrial development and related commercial development would occur in large areas of the mid section, with critical areas for plant and animal species and their habitat protected to the extent possible. In the northern portion of the area, critical plant and animal species and their habitat would be protected.

Wildlife and habitat uses of portions of the site would be compatible with Native American uses, except for pasturing livestock.

2 *Option 2: Focus on Wildlife*

This future use option would be similar to Option 1, "Focus on Economic Development," for the southeastern and northern portions of the site. However, in contrast to Option 1, the focus in the mid section of the geographic area would be on managing to protect threatened and endangered species and their habitat. "Islands" of industry would be allowed where facilities already exist or where there is contamination.

Wildlife and habitat uses of portions of the site would be compatible with Native American uses, except for pasturing livestock.

3 *Option 3: Native American Uses*

Traditional Native Americans uses of the area, to hunt, fish, pasture animals, and to gather foods and medicines, could occur. There would be access to the River and to cultural and religious sites, and archaeological districts on the land, the islands and the river would be protected.

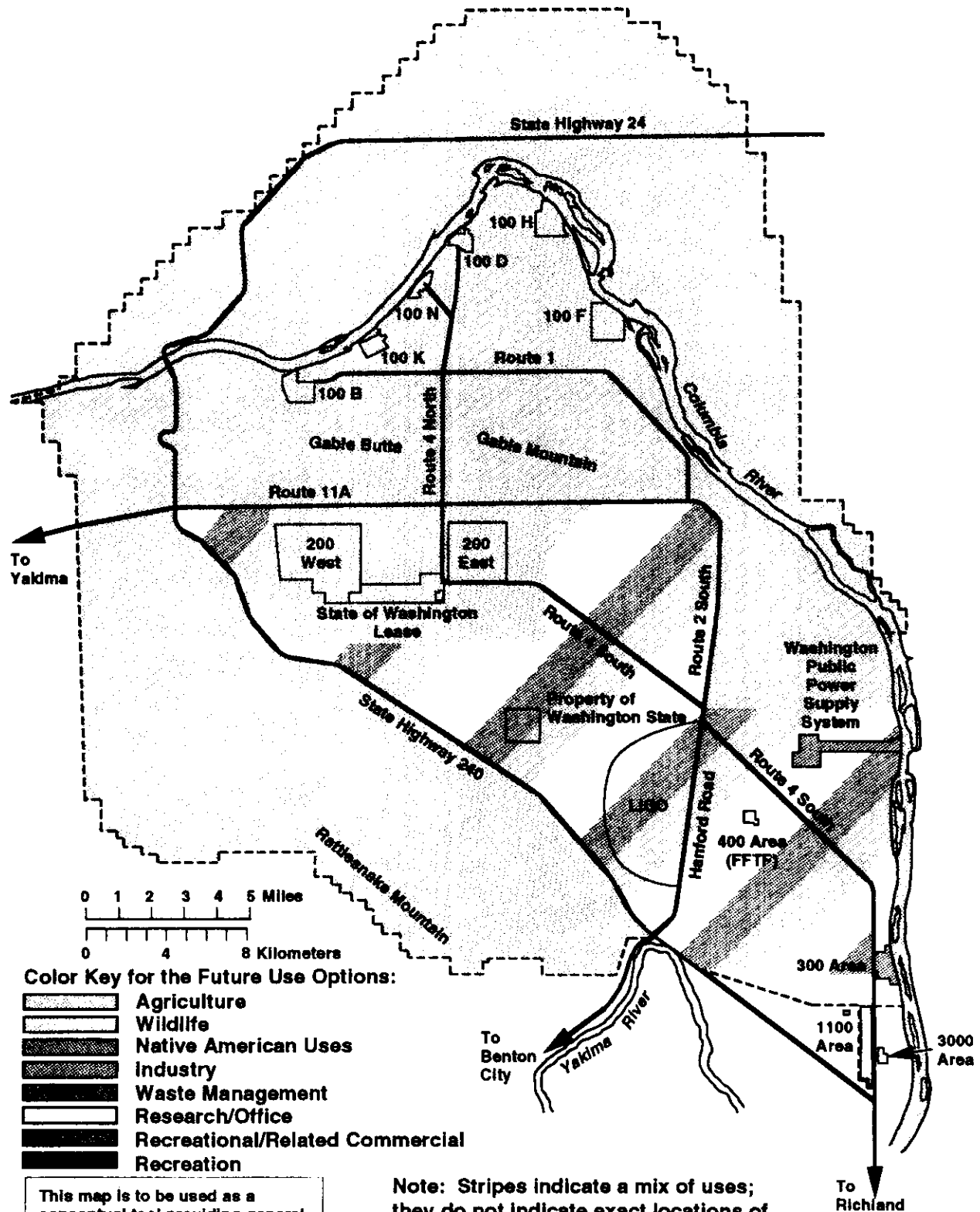
* Future use options were included if they were advocated by one or more members of the Working Group and should not be considered to be recommendations of the Working Group for future site uses. They are not in priority order.

4

Option 4: Agricultural Use

Outside the 300 and 1100 Areas near Richland, urban uses (industrial and commercial activities, except for residential), would occur. Irrigated agriculture for non-consumptive crops, such as pulp trees, would occur where appropriate soils and conditions exist. Monitoring would occur to ensure that irrigation was not contributing to groundwater contamination problems.

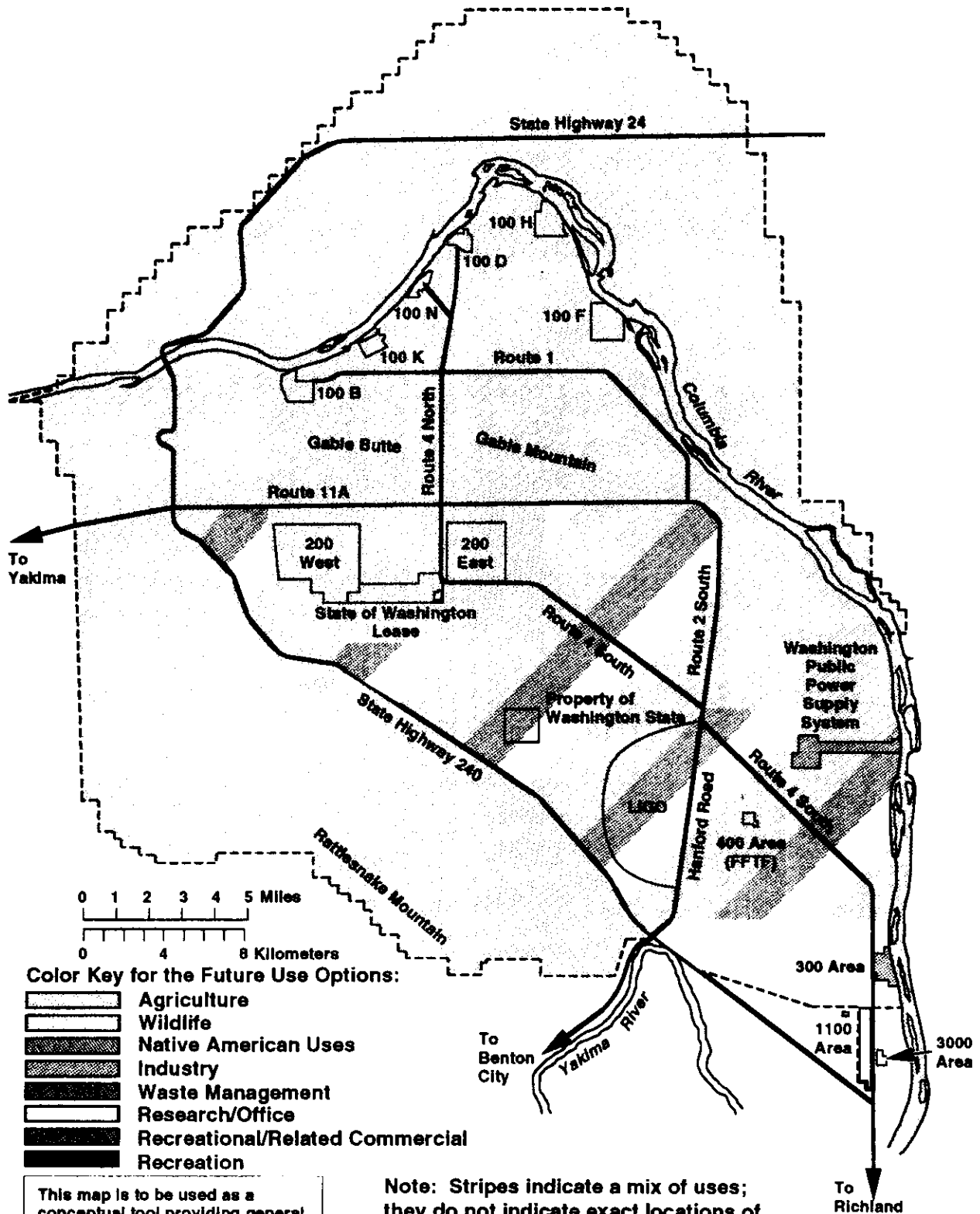
OPTION 1: Focus on Economic Development



This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

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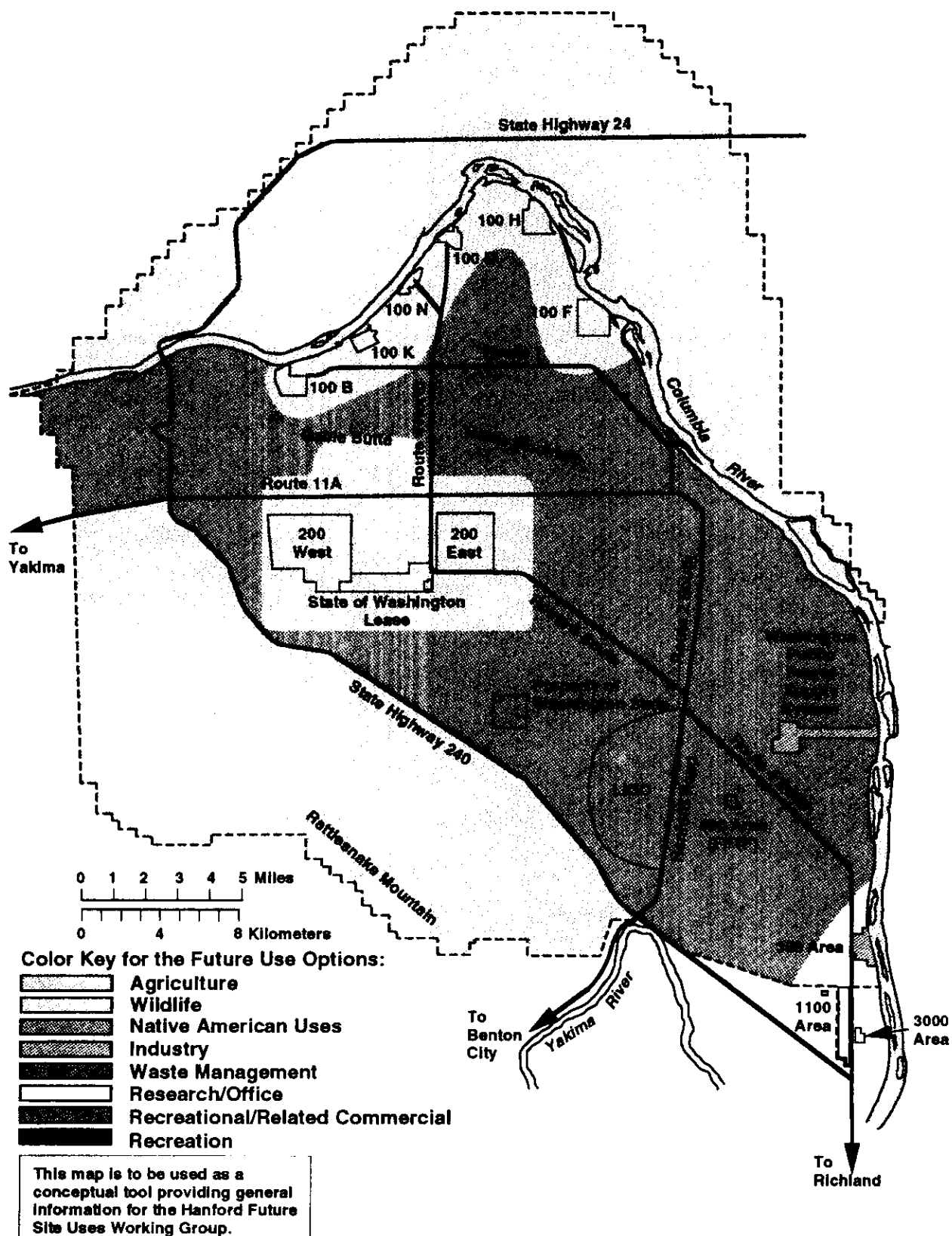
OPTION 2: Focus on Wildlife



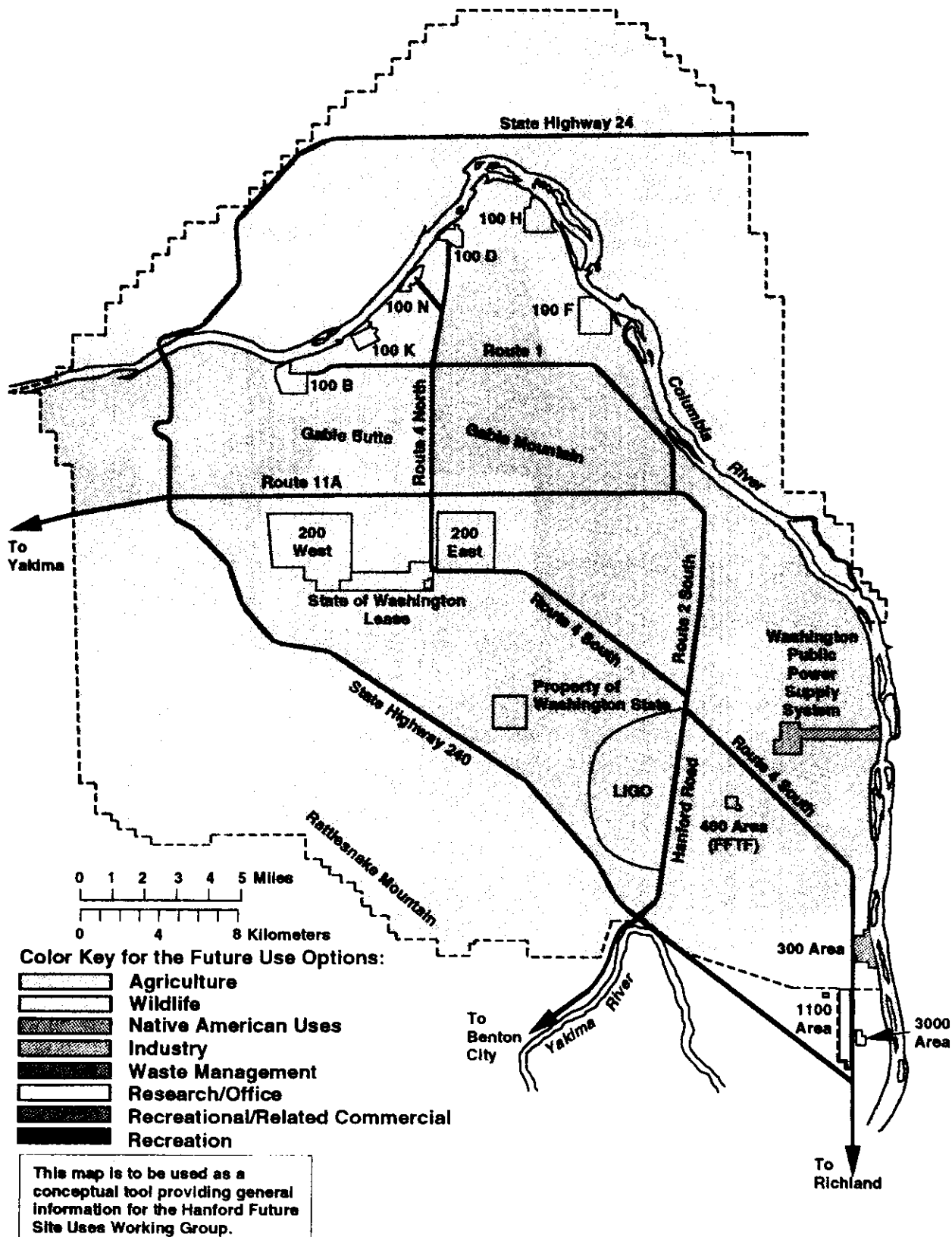
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

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OPTION 3: Native American Uses



OPTION 4: Agricultural Use



Cleanup Scenarios

Two cleanup scenarios were identified that would enable the four future use options proposed. The first would have a mix of "restricted" and "unrestricted" areas. The second would have all of the geographic area outside of the 300 Area and the groundwater "unrestricted."

(A) Cleanup Scenario A: Cleanup for Economic Development, Wildlife

This cleanup scenario assumes the following levels of access for different parts of "All Other Areas."

- The surface in the 300 Area would be cleaned up to "restricted" status, that is, to the degree necessary for industry.
- In the 1100 Area the surface and groundwater would be cleaned up to "unrestricted" status because of the proximity of well fields and residences in Richland.
- The surface in the remaining operable units would be cleaned up to industrial standards or "restricted" status for industrial or wildlife uses.
- Finally, surface uses in the remainder of the site, which is currently uncontaminated, would be "unrestricted."

Groundwater would be cleaned up to "unrestricted" status in the 1100 Area. Elsewhere it would be "restricted" where it is contaminated or where drawing groundwater would spread contamination.

Future Use Options Enabled by Cleanup Scenario A



Option 1: Focus on Economic Development

Option 2: Focus on Wildlife

Option 3: Native American Uses (hunting and livestock grazing in "restricted" areas, gathering foods and medicines in "unrestricted" areas.)

Timing and Importance

The following criteria were identified for deciding which contaminated areas within All Other Areas would be most important for immediate or early cleanup:

- Eliminating contamination threats to the Columbia River because of the threat they pose to human and environmental health. Key priorities in "All Other Areas" would be threats to well-fields used for drinking water and contaminated areas where there is existing public access to the River.
- Cleaning up areas that are highly desirable for economic development.
- Cleaning up large areas that have small amounts of contamination and that can be cleaned up quickly, using existing technology, at relatively low cost, or "quick hits," for example, the area between ALE and the River, west of Highway 240.

(B) *Cleanup Scenario B: Cleanup for Agriculture and Native American Uses Outside the 300 Area*

In the 300 Area the surface and groundwater would be cleaned up to "restricted" status for industrial use. Outside the 300 Area, this cleanup scenario assumes that the surface, subsurface and groundwater would be cleaned up to "unrestricted" status.

Future Use Options Enabled by Cleanup Scenario B*

(B) Option 3: Native American Uses

[3] **[4]** Option 4: Agricultural Use

Timing and Importance

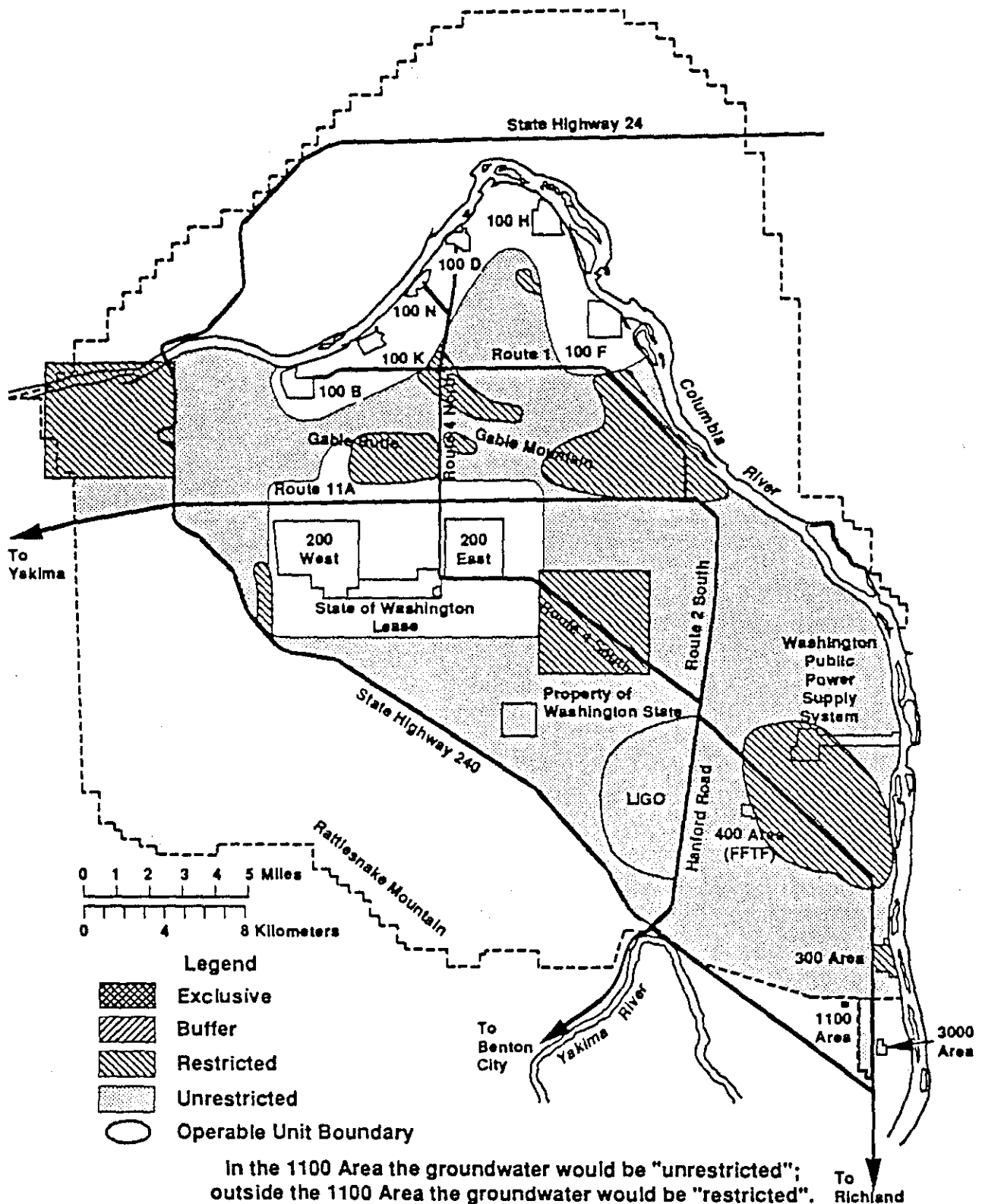
"Unrestricted" status for the surface, subsurface and groundwater would be achieved within 100 years, after which it is assumed that institutional controls would no longer be effective.

* Future Use Options 1 and 2 could also be enabled by Cleanup Scenario B. However, they are not included here because Cleanup Scenario B is a more stringent cleanup scenario than would be necessary to enable Future Use Options 1 and 2. For Future Use Option 2, Focus on Wildlife, Cleanup Scenario B might impair that use if the cleanup to "unrestricted" were to damage wildlife resources.

Hanford Future Site Uses Working Group Basemap

All Other Areas

Cleanup Scenario A: Clean Up for Economic Development and Wildlife

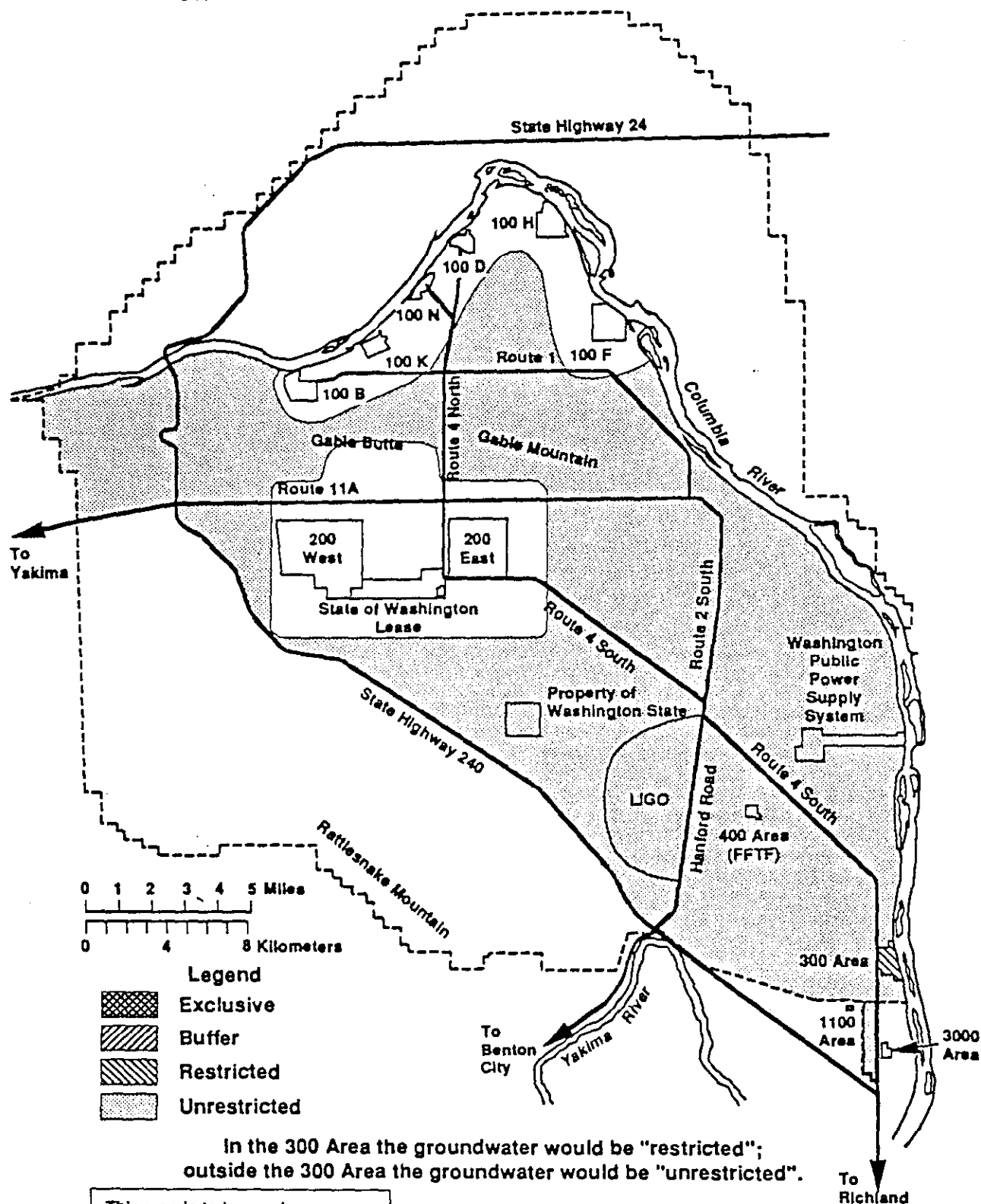


This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

Hanford Future Site Uses Working Group Basemap

All Other Areas

Cleanup Scenario B: Clean Up for Agriculture and Native American Uses Outside the 300 Area



Chapter 3

Working Group Process

BACKGROUND

The Hanford site, a 560 square mile complex located in southeastern Washington State, has been operated since 1943 by the U.S. Department of Energy and its predecessor agencies for the production of nuclear materials for national defense programs. Radioactive, hazardous, and other wastes have been disposed of in or discharged to the air, soil, and water at the site. Portions of the soil and groundwater underlying the site are contaminated. Numerous operating and retired facilities, most of which contain some residual radioactive or hazardous material, remain at the site.

By the end of the 1980's, the defense mission at the Hanford Site ended. A transition to an environmental restoration mission and other future missions began. The ultimate goal of the restoration mission is to protect public health and safety and to mitigate and remediate environmental damage from exposure to the contaminants at Hanford. In 1989, the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA) and the State of Washington (Washington), signed the Hanford Federal Facility Agreement and Consent Order, also known as the Tri-Party Agreement. This Agreement established milestones and a schedule for cleanup and restoration of the Hanford site over a 30-year period. Significant efforts are currently underway by the "three parties" to accomplish this cleanup.

In 1990, the three parties recognized the need to articulate a vision for the future of Hanford that would play an integral part in the transition from the defense mission of the past to the environmental restoration mission and other new missions of the future. Key parts of this vision would be the identification of potential future uses of the land at Hanford and their implications for a cleanup strategy. Specifically, an array of future use options and associated cleanup scenarios were needed for an environmental impact statement that DOE intended to prepare in response to the requirements of the National Environmental Policy Act. The purpose of this environmental impact statement, the Hanford Remedial Action Environmental Impact Statement (HRA EIS) would be to determine potential impacts associated with alternatives for environmental remediation of "past practices," that is, contamination that occurred prior to the mid 1970s. While individual cleanup decisions will be made under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and the Resource Conservation and Recovery Act (RCRA) of 1976, through the framework of the Tri-Party Agreement, the HRA EIS would examine the "big picture" of environmental impacts from cleanup activities associated with addressing these

past practices. It also would allow DOE to assess how site-specific decisions contribute to Hanford-wide goals for cleanup. To assist in the scoping or identification of alternatives to be investigated in the HRA EIS, DOE felt that focused discussions of future land uses by representatives of a wide range of governments, agencies and constituency groups would be a valuable supplement to the public scoping process in defining a set of appropriate alternatives for the EIS. At the same time, the states of Washington and Oregon, EPA, tribal governments and local governments were recognizing the need to focus cleanup efforts through a discussion of future site uses.

ORGANIZING THE WORKING GROUP

In November 1990, an Organizing Committee for the Future Site Uses Project decided that an open, fair process was needed that would bring together the parties and constituencies as equals in a Working Group to discuss their respective future visions for the Hanford site. This Organizing Committee was made up of representatives of the DOE, EPA, the states of Washington and Oregon, U.S. Department of Interior, Yakima Indian Nation, Confederated Tribes of the Umatilla Indian Reservation, and Franklin, Benton and Grant Counties. At the Organizing Committee's request, the DOE, the EPA and the State of Washington took the lead in developing a scope of work and jointly selecting and administering an independent facilitator for the process.

By Fall 1991, an independent facilitation team was selected. Through interviews with representatives of the governments and agencies on the Organizing Committee, the facilitation team developed a preliminary list of individuals to interview to identify potential candidates for positions on the Working Group. These individuals were asked what would make a process successful and to recommend other individuals for the facilitation team to consult or interview. As a result of all of the interviews, a process for the Working Group was developed that reflected the recommendations of the interviewees. The Working Group process was designed to bring a wide variety of viewpoints to the table and to provide participants with a common base of information about the site on which to build their work. The interviewees also emphasized the need for the agencies responsible for decisions affecting Hanford's cleanup and future use to commit to using the products of the process in their decision-making.

The Organizing Committee met in February, 1992 to review, revise and approve the process, schedule, charter and groundrules for the Working Group prepared by the facilitation team, to consider a list of potential Working Group members, and to authorize the facilitators to extend invitations to participate in the Working Group on behalf of the Organizing Committee. The Committee also authorized the facilitation team to establish criteria for selecting a Chairperson for the Working Group and to conduct interviews to that end.

MEMBERSHIP OF THE WORKING GROUP

After extensive interviews and consultation with the Organizing Committee, invitations to

participate were sent out to individuals from across the states of Washington and Oregon. Dr. Mark Drummond, President of Eastern Washington University, was invited to become the chair. The membership of the Working Group represented a broad range of constituencies with an interest or stake in the future of Hanford. The group consisted of representatives of federal, tribal, state, and local governments, agriculture, business and economic development, environment, interest groups focused on Hanford, labor and academia. (A full list of the Working Group membership is included in the Acknowledgments.) A "team" approach to membership provided 28 seats at the table to be filled by teams of no more than two individuals who were empowered to speak for the constituencies they represented. This approach aimed at ensuring that all constituencies would be represented at every meeting even if some individuals could not attend all the meetings.

CHARTER OF THE WORKING GROUP

On April 2 and 3, 1992, Working Group members discussed a draft Charter, written by the facilitation team and reviewed by the Organizing Committee, that defined the purpose of the Working Group and the scope of its work. In the Charter, the Working Group was charged with developing a finite set of alternatives for future site use and resulting cleanup scenarios for Hanford. These alternatives were to be based on participants' visions and due consideration of significant factors which would affect site use and cleanup. In particular, the Working Group was to observe the linkage between future site use and cleanup scenarios, how each issue would affect the other. The results of the Working Group would serve as input to the Hanford Remedial Action Environmental Impact Statement (HRA-EIS), the Hanford site planning process, and other relevant processes and decisions.

The Working Group agreed that they did not intend to seek consensus on a single vision for Hanford's future site use and cleanup strategy, but that commonalities and convergences of visions would be emphasized, especially when they point to specific cleanup scenarios and priorities. The Working Group also acknowledged that this process was not intended to replace or trigger the specific responsibilities and procedures contained in the Tri-Party Agreement. Any resulting revision in the Tri-Party Agreement suggested by the Group's product would be addressed through the appropriate amendment process to the Agreement.

On April 3, the Working Group amended the draft Charter to include two additional statements. The first defined what the term "cleanup" implied for the Working Group: "The cleanup of Hanford encompasses the full range of activities associated with environmental restoration and waste management. The use of the word 'cleanup' does not imply 'how clean is clean,' nor the type of environmental restoration and waste management that is feasible." The second addressed the concern about limited knowledge: "It is acknowledged that the ability to describe future land uses is affected by the limited existing knowledge regarding the nature and extent of contamination and the technical methods to deal with it." As amended, the Charter was approved by consensus.

THE WORKING GROUP PROCESS

On April 2 and 3, 1992, the Hanford Future Site Uses Working Group met for its first plenary session. During the two-day session, the Working Group members expressed their expectations of the process, revised and approved the Charter defining the scope of their work and the Groundrules to govern how they conducted their work, and set a schedule of meetings to complete their work by year's end. As they discussed the process, they identified topical areas and issues to be explored as a common information base and decided the best approach for considering future use options at the site was to divide it into geographic areas. This geographical focus continued throughout the process while site-wide perspectives were also encouraged. Working Group members identified in writing specific questions and issues related to topics and recommended individuals and resources to address these questions.

On the second day of this first session, the Working Group attended a tour of the Hanford site. During the tour, experts on various areas and aspects of the site informed the Working Group about the natural, built and historical features of the site as well as about sources and locations of contamination. The tour served as the first step to developing a common understanding and base of information about the site and offered many Working Group members their first opportunity to view the site in person. The presentations during the tour also provided a variety of perspectives on the site and its history that had not previously been expressed in a single forum.

At the April 2-3, 1992 Working Group meeting, members identified topics, questions and issues on which they felt it was important for the Working Group to have a common base of information. In response to the information needs identified, the following approach was agreed upon for presenting information. "Baseline" information would be provided in three areas:

- Explaining the historical context within which the current situation at Hanford has arisen and parameters for release of land in the future;
- Describing the location, nature and extent of known contamination and technologies to address it; and
- Identifying the many decisions that affect the site.

The information provided was to focus on 7 distinct geographic areas within the site identified by the Working Group. A series of technical panels and presentations were organized for subsequent Working Group meetings to address the identified topics and issues. The third baseline of information about decisions affecting the site took the form of a "Decisions Paper" prepared by the facilitation team, describing key decisions and documents.

During May, June and July, 1992 the Working Group convened technical panels and heard presentations on issues identified at the April meeting to address the first two baselines of information. Panels of experts presented information and responded to questions from the Working Group on topics including Native American uses of the Hanford area and the Treaties of 1855, European settlers' use of the Hanford area, federal acquisition of the

Hanford Site, development of the local economy and population, Contamination Primer (nature, extent and location of contamination), technologies to address contamination, environmental monitoring, decision-making related to the Hanford site, National Environmental Policy Act/Hanford Remedial Action EIS, and the Growth Management Act. (The information presented to the Working Group by these panels and presentations is summarized in Appendix A of this report, "Basic Information about the Hanford Site Used by the Working Group.")

At the June meeting, the Working Group learned more about the seven distinct geographical areas which they had identified in April at seven "geographic area stations." At each "station" there were maps and information points to identify significant natural features, cultural and economic aspects, and locations and types of known contamination within the following geographic study areas: North of River, the Columbia River, the Reactors on the River (100 Area/National Priorities List or NPL Site), the Central Plateau or 200 Area, the Arid Lands Ecology Reserve, Scattered Sites and All Other Areas. (Subsequently, the Working Group consolidated Scattered Sites and All Other Areas into a single area called All Other Areas.) Experts were available at each "station" to respond to questions by the Working Group as they consulted the maps and information points about each area. Prepared by a more thorough understanding of the individual aspects of each area, the Group members then began the task of envisioning future use options for the Hanford site.

During July and August, the Working Group divided into four Small Groups to study and discuss the geographical areas in more detail and to determine the implications for cleanup of the future use options envisioned in June. The Small Groups proposed additional future use options and drafted cleanup scenarios that mapped out levels of access needed to allow those uses to be possible. (The process used by the Small Groups and the results of their work are described in Chapter 2 of this report, "Geographic Area Future Use Options and Cleanup Scenarios.")

In September, the effort to reach a common information base continued with presentations by John Wagoner, Richland Field Office Manager for DOE, and by a representative of the General Services Administration who discussed the procedures for the release of federal lands. The full Working Group heard the reports of the Small Groups on the cleanup scenarios and future use options for each of the geographic study areas. These reports formed the basis of the draft final report of their findings and recommendations which the Group developed in October and November.

In October, the Working Group began drafting a report of their findings during a two-day retreat. At the retreat there was a slide show and presentation on critical species and habitat reflecting a recent inventory of the site south of the River. The Group discussed the implications of their findings and scenarios for cleanup efforts. The Group then sponsored a series of eight Open Houses in Washington (Richland, Pasco, Toppenish, Mattawa and Seattle) and Oregon (Portland, Mission and The Dalles) between November 2 and November 17. The purpose of the Open Houses was to provide interested citizens with an opportunity

CHAPTER 3 Working Group Process

to review the Group's work and to offer comments while the Group's report was in the draft stage. (A summary of written comments from the Open Houses is presented in Appendix H.)

The draft report was revised at the November meeting of the Working Group. A final meeting was held on December 3. The Working Group's report was issued in December, 1992.

NATURE OF COMMITMENT

Early in the Working Group process, the DOE, EPA, Washington and Oregon expressed their commitment to support the efforts of the Working Group and to utilize its products in making decisions about the future of the Hanford site. In letters addressed to Working Group members, the three parties and the state of Oregon expressed their commitment to the Hanford Future Site Uses Project. (Copies of these letters are included in Appendix B.) The continued support of and participation in the Working Group by DOE, EPA, Washington and Oregon also spoke to the nature of their commitment to the Working Group process.

Glossary

ALE - Arid Lands Ecology Reserve.

Basin - excavated lined area to hold fluids until they evaporate or until radioactive decay reduces their activities to levels permissible for release.

Buffer - a term used by the Working Group to refer to a part of the site that surrounds an "exclusive" area that would be treated like an "exclusive" area because of risk emanating from the "exclusive" area it abuts. Environmental restoration activities would occur in buffers, but waste management activities would not. A buffer area would not be expected to remain a buffer area forever.

Burial Ground - land area specifically designated to receive contaminated waste packages and equipment, usually in unlined trenches covered with overburden.

Capsule - stainless-steel cylinder used for containment of strontium or cesium recovered from radioactive wastes.

Carbon Tetrachloride - chlorinated organic solvent used in the plutonium extraction process at the Plutonium Finishing Plant. Known human liver carcinogen via inhalation and ingestion. Can damage central nervous system.

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act, also known as "Superfund;" this is a federal law that provides authority for cleanup of hazardous substances that could endanger human health or the environment.

Cleanup - environmental restoration and waste management activities required to remove, isolate, treat, stabilize or contain contamination resulting from past practices in order to reduce associated risks.

Cleanup Scenario - description that identifies distinct levels of "access," based on the presence of contamination, to the air, the surface, the subsurface and the groundwater needed to allow future use options to occur. The levels of access used by the Working Group are "unrestricted," "restricted," "exclusive," and "buffer."

Contamination - measured concentration of an undesirable chemical that is above the normal or background level.

GLOSSARY

Decontamination and Decommissioning - process of removing contamination from facilities or equipment by washing, chemical action, mechanical cleaning, or other techniques; then removing facility or equipment from operation; and entombing, dismantling and removing, or converting the facility for another use.

Disposal - emplacement of waste so as to ensure isolation from the biosphere without maintenance and with no intent of retrieval, and requiring deliberate action to gain access after emplacement.

DOE - U.S. Department of Energy.

DOE-RL - Richland Operation Office of DOE.

Double-shell Tank - reinforced concrete underground vessel with two inner steel liners to provide containment and backup containment of liquid wastes; space between the shells contains instruments to detect leaks from inner liner.

EIS - Environmental Impact Statement.

Environmental Restoration - cleanup and restoration of sites contaminated with hazardous substances during past production or disposal activities.

EPA - U.S. Environmental Protection Agency.

Exclusive - term used by the Working Group to mean an area where access would be restricted because of risk to personnel who were trained and monitored for working with radioactive or hazardous materials.

Expedited Response Action - given a more immediate threat to human health or the environment, under CERCLA, old waste sites may be cleaned up more quickly by bypassing some interim reviews and paperwork. Final disposition of these sites is done via a CERCLA Record of Decisions for the entire operable unit.

Fast Flux Test Facility - liquid metal reactor used to test advanced reactor technology.

FFTF - Fast Flux Test Facility.

Fuel - fissionable material used as the source of power when placed in a critical arrangement in a nuclear reactor.

Future Use Option - as used by the Working Group, a generic proposal for how an area of the site might be used in the future. The viability of future use options depends upon specific levels of access (see Cleanup Scenario) which would have implications for the degree of cleanup.

Groundwater - a water-saturated region below the land surface.

Grout - a fluid mixture of cement-like materials and liquid waste that sets up as a solid mass and is used for waste fixation and immobilization.

Hanford Defense Waste EIS - Environmental Impact Statement completed in 1987 by DOE-RL (DOE/EIS-0113) that examined the potential impacts for management of defense-related wastes at Hanford. On the basis of this EIS, DOE decided to pretreat double-shell tank wastes, vitrify the high-level portion for disposal in an off-site repository and solidify the low-level portion for on-site burial; continue to store the cesium and strontium capsules for disposal in a geologic repository; and build a facility to prepare certain types of transuranic waste to be sent for off-site disposal.

Hanford Reach EIS - Environmental Impact Statement and River conservation study being prepared by the National Park Service in accordance with Public Law 100-605. The draft EIS was issued in June 1992, and evaluates a range of alternatives for protection of the Hanford Reach of the Columbia River (a 51 mile segment of the river extending from one mile below Priest Rapids Dam, to the McNary pool north of Richland).

Hazardous Waste - non-radioactive chemical toxins or other wise potentially dangerous materials defined by RCRA.

Hanford Remedial Action EIS (HRA-EIS) - Environmental Impact Statement being prepared by the U.S. Department of Energy Richland Office. The HRA-EIS will evaluate a range of cleanup approaches and technologies and their application to various site conditions to estimate the potential cumulative impacts associated with the different alternatives for environmental remediation. A scoping notice for this EIS was published in the Federal Register on August 21, 1992.

High-level Waste - the highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of TRU waste and fission products in concentrations as to require permanent isolation.

K Basins - basins in the K reactor area used for storage of spent fuel rods immersed in water. See "Basin."

Low-level Waste - radioactive waste not classified as high-level waste, TRU waste, spent nuclear fuel, or byproduct material (see DOE Order 5820.2).

Memorandum of Agreement between the Bureau of Reclamation and the Atomic Energy Commission, February, 1957.

GLOSSARY

Mixed Waste - waste that is both radioactive and hazardous.

N Reactor - last plutonium production reactor built at Hanford. Operated from 1964 to 1987. Shut down in 1992.

National Environmental Policy Act - established requirement for conducting environmental reviews of Federal actions that potentially may significantly impact the environment.

NPDES - National Pollutant Discharge Elimination System. Permit system created by the federal Clean Water Act to regulate discharges of pollutants to surface waters of the United States.

Nuclear Reactor - device constructed of fissionable material such that a chain of fission events can be maintained and controlled to meet a particular purpose.

Operable Unit - discrete portion of site consisting of one or more release sites considered together for assessment and cleanup activities. Release sites generally are grouped together in an operable unit based on geographic proximity, similarity of waste characteristics and site type, and the possibilities for economies of scale.

Plume -- a distribution of contaminants a distance away from a point source in a medium like groundwater or soil; a defined area of contamination.

Radioactive Waste - solid, liquid, or gaseous material of negligible economic value that contains radionuclides in excess of threshold quantities except for radioactive material from post-weapons-test activities.

Radioactivity - property of certain nuclides of emitting particles or electromagnetic radiation while undergoing nuclear transformations.

RCRA - Resource Conservation and Recovery Act; federal law regulating generation, transportation, treatment, storage, and disposal of hazardous wastes and remediation of waste sites currently in use.

Reactor Decommissioning EIS - Environmental Impact Statement assessing the potential impacts of five alternatives under consideration for the decommissioning of eight plutonium production reactors at Hanford (reactors B, C, D, DR, F, H, KE, and KW). [The N reactor is not addressed because it was not declared surplus at the time the EIS was being prepared.] The draft EIS was issued by DOE-RL in March 1989 (DOE/EIS-0119D); final EIS, pending.

Record of Decision - (ROD); (1) under CERCLA, the official document used to select the method of remedial action and cleanup goals to be implemented at a particular

contaminated site; (2) under NEPA, the official document describing an agency's final choice among alternatives that have been the subject of study in an Environmental Impact Statement.

Remediation - removing or correcting a condition, such as by removing or isolating contaminated material.

Red Zone - a 1973 designation for a portion of the North of the River geographic area where irrigation is currently prohibited because of the presence of Ringold clay formations that are of low permeability and, when saturated, cause the soils above to slip. It is believed that any contributions to the upper ground water aquifer in this area would directly affect sloughing of the White Bluffs.

Repository - a place for the permanent disposal of radioactive wastes in an engineered facility in an underground geologic formation.

Restricted - a term used by the Working Group to mean that there would be limits on the use on an area because of contamination. It can apply to the air, surface, subsurface or groundwater. Restricted as a category applied to groundwater does not mean that the groundwater would not ultimately be cleaned up to "unrestricted" status.

Single-shell Tank - older style Hanford high-level waste underground tank composed of a single carbon steel liner surrounded by concrete.

Spent Nuclear Fuel - fuel that has been withdrawn from a nuclear reactor following irradiation, whose constituent elements have not been separated by reprocessing.

Strontium 90 - heavy radioactive isotope of strontium which is hazardous because it can be assimilated by and deposited in the bones of organisms much like calcium. The primary source of strontium 90 attributable to Hanford entering the Columbia River has been the 100-N Area liquid waste disposal facilities, which are known to discharge to the river via groundwater seepage.

Superfund - see CERCLA.

Transuranic Waste - waste containing radionuclides with an atomic number greater than that of uranium, with a half-life of more than 20 years, and in concentrations greater than 100 nanoCuries (nCi) per gram of waste. In other words, those wastes contaminated usually with plutonium which do not have much penetrating radiation (a piece of paper or two inches of air will block the radiation) but which require isolation because they remain radioactive for a long time and are very damaging to internal tissue.

Treatment - an activity that alters the chemical or physical nature of hazardous or radioactive waste to reduce its toxicity, volume and/or mobility.

GLOSSARY

Tri-Party Agreement [Hanford Federal Facility Agreement and Consent Order] - agreement signed in 1989 by DOE, the Environmental Protection Agency, and the Washington Department of Ecology that identifies milestones for key environmental restoration and waste management actions.

Tritium - radioactive isotope of hydrogen.

Unrestricted - a term used by the Working Group to mean that contamination would not preclude any human uses of an area.

Uranium - heavy radioactive element naturally occurring in isotopes of U²³⁴, U²³⁵, and U²³⁸. Fuel for nuclear weapons.

Vadose Zone - unsaturated region of soil between the ground surface and the water table.

Vault - type of solid waste structure constructed out of concrete.

Vitrification - method of immobilizing radioactive waste for eventual disposal in a geologic repository; involves adding frit and waste to a joule-heated vessel and melting it into a glass that is then poured into a canister.

Waste Management - activities involving the short-term or long-term storage or isolation of existing or newly-generated wastes, treatment and final disposal of wastes.

WPPSS - Washington Public Power Supply System.

Appendix A

Working Group Charter and Groundrules

APPENDIX A

I. CHARTER:

WORKING GROUP HANFORD FUTURE SITE USES PROJECT

A. Purpose

The Hanford Site is in transition from a defense mission of the past to the environmental restoration mission and other future new missions. The ultimate goal of the restoration mission is to protect public health, safety, and to mitigate and remediate environmental damage from exposure to the contaminants at Hanford. To be useful in guiding future decisions, this goal must be supplemented by an understanding of potential future site uses at Hanford and an analysis of the potential uses' impact on cleanup scenarios. This Working Group will serve as a first step toward development of that analysis.

The purpose of this Working Group is to enable participants to articulate their vision of possible future site uses for Hanford, and to explore the implications of those visions on cleanup scenarios and priorities. The Working Group will be open to the commonalities within those visions and will seek to identify convergences of cleanup scenarios and priorities which may result from them.

B. Scope and Objectives

The Working Group is charged with developing a finite set of alternatives for future site use and resulting cleanup scenarios for Hanford. These alternatives will be based on participants' visions and due consideration of the following factors, among others, to be identified by the Working Group, which may affect site use and cleanup:

- o technological opportunities and constraints
- o public health and safety
- o public expectations
- o social acceptability
- o cultural considerations
- o ecological considerations
- o legal rights, treaties and obligations
- o current site uses
- o costs
- o economic development opportunities
- o other appropriate factors

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In particular, the Working Group will observe the linkage between future site use and cleanup scenarios. The question is not "future site use" or "how clean is clean," per se, in isolation, but how each issue affects the other.

The results of this Working Group will serve as input to the Hanford Remedial Action Environmental Impact Statement, the Hanford site planning process, and other relevant processes and decisions.

This Working Group will serve as a critical first step for the Pacific Northwest to articulate its visions for Hanford as the cleanup process commences.

C. Stipulations

It is not intended that the Working Group seek consensus on a single vision for Hanford's future site use and cleanup strategy. Commonalties and convergences of vision will be emphasized, especially when they point to specific cleanup scenarios and priorities.

The cleanup of Hanford encompasses the full range of activities associated with environmental restoration and waste management. The use of the word "cleanup" does not imply "how clean is clean," nor the type of environmental restoration and waste management that is feasible.

It is acknowledged that the ability to describe future land uses is affected by the limited existing knowledge regarding the nature and extent of contamination and the technical methods to deal with it.

Working Group members may seek clarification about the possible impact of the process on two ancillary issues: future changes, if any, in land ownership status; and implementation or amendment of the Tri-Party Agreement. This process is not intended to conclude with specific recommendations regarding the ultimate land ownership status necessary to implement any vision. This process is not intended to replace or trigger the specific responsibilities and procedures contained in the Tri-Party Agreement. Any resulting revision suggested in the Tri-Party Agreement would be addressed through the appropriate amendment process to the agreement.

D. Cornerstones

The cornerstones for starting the Hanford Future Site Use/Cleanup Scenarios process are:

- (1) Nothing related to these two aspects (site use options or cleanup strategies) is "off the table" by fiat of any participant. Prior statute, treaties, legal decree, opinion, or precedent, as well as by regulatory or policy decisions, will be described and utilized to help frame the

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discussion, but need not limit it. The visions of all participants will receive equal treatment in the process. Any vision of the Department of Energy as the party who implements current site use and is responsible for cleanup, will be important but not determinative in this process.

- (2) The Working Group will need to have an understanding of the current implications and possible future repercussions of certain technical considerations. Examples of such technical considerations could include the handling of the single and double walled tanks and their subsurface contamination; contamination in the groundwater and its migration and/or eventual treatment; and the dismantling and disposal of old reactors and other capital equipment or facilities. It will be the responsibility of the participants to engage in a joint education process on the appropriate identified issues.

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II. GROUND RULES:

WORKING GROUP HANFORD FUTURE SITE USES PROJECT

The purpose of these groundrules is to make explicit the common expectations with which the participants enter the process. They describe the purpose of the process, the manner in which the several governments and interests are structured for effective participation, the responsibilities of the participants to one another and to their constituents, the spirit in which they will participate in the process and the responsibility of the facilitators to facilitate the process. The intent of these groundrules is to provide a framework for fruitful discussion and exchange that guides rather than constrains interaction.

Participating in the facilitation process signals an understanding and acceptance of the groundrules. The groundrules may be amended by consensus of the Working Group.

A. Purpose

The purpose of this Working Group is to enable participants to articulate their vision of possible future site uses for Hanford, and to explore the implications of those visions on cleanup scenarios and priorities. The Working Group will be open to the commonalities within those visions and will seek to identify convergences of cleanup scenarios and priorities which may result from them.

B. Roles and Responsibilities of Working Group Participants

- o Participants will concur in the desirability of exploring a range of future site use/cleanup scenarios for the Hanford site.
- o Participants will fully explore issues, recognizing time limitations and size of the Working Group.
- o Participants commit to search for opportunities and creative solutions.
- o All participants in the Working Group will seek to clearly articulate their concerns and goals regarding the issues.
- o All participants recognize the legitimacy of the concerns and goals of others.

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- o All participants will refrain from personal attacks and characterizations during meetings of the Working Group and subgroups.
- o Participants will enter into a dialogue that includes listening carefully, asking questions, and educating others regarding needs. The atmosphere will be problem solving, rather than stating positions.

C. Role and responsibilities of the facilitators

- o The facilitators are impartial individuals who guide the process, including facilitating Working Group and subgroup meetings.
- o The responsibility of the facilitators is to keep the group focused on the agreed upon task, to suggest alternative methods and procedures, and to encourage participation by all group members.
- o The facilitators assist in the preparation of agendas, prepare meeting summaries and coordinate meeting logistics. The facilitators and Chair are in charge of the floor.

D. Meeting content

- o Meetings will be task oriented with specific agendas. Agendas will describe the matter for discussion, the purpose of the discussion and provide such other information necessary to support informed discussion.
- o A draft agenda for the next session will be developed at the conclusion of each session. A copy of the draft agenda will be mailed to Working Group members at least seven days prior to the session.

E. Communication during process

- o The facilitators and the Chair shall be the designated spokespersons for the process and its progress.
- o All of the individuals who are participating in the Working Group accept the responsibility to keep their associates and constituency groups informed of the progress of the discussions and to seek advice and comments.
- o A joint statement suitable for discussion with the press will be agreed to at the end of each joint meeting. When responding to the press, participants and

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facilitators shall respond within the spirit of the press statement agreed to at the conclusion of each session.

- o Participants will not characterize the motivations or values of any other participant or group in any discussions they have with the press.
- o Participants agree that they will try to work out their differences at the table instead of in the press.

F. Internal Decision-Making

- o Consensus is defined as agreement of all participants, and will be the method of determining Working Group agreement on issues.
- o In the absence of consensus, the Working Group will report different perspectives held on the issue.
- o Disagreements will not be presented in terms of the members for or against.
- o There will be a single report encompassing both issues on which there is agreement and issues on which there are differing perspectives. All reports will be reviewed and approved by the Working Group.

G. Subgroups

- o Composition of subgroups, if established, will be balanced among the interests represented on the Working Group. The charge of the subgroups will be to refine issues, search for data, identify relevant experts and possibly present options for the Working Group to consider. The subgroups will not decide or recommend on behalf of the full Working Group.

H. Teams and Observers

- o Consistency at the table for the Hanford Future Site Uses Working group is critical and an identified number of seats have been allocated for each participating government, agency and interest group/constituency. Only one person can sit "at the table" for each seat. In the absence of a single person who can commit to attending all Working Group meetings, a single seat at the table may be held by a "team" of two people who are identified at the outset of the project. Both members of the team will be able to represent the participating government, agency, or interest group. Both members of each team can participate in Working Group and Subgroup Meetings.

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- o Meetings of the Working Group will be open to the public and the press.
- o Observers will sit in chairs provided for observers, not at the table.

I. Products

- o The final report of the process shall be approved by the Working Group.
- o The goal of the process is to identify a finite set of alternatives regarding future site use/cleanup scenarios to be analyzed in an environmental impact statement on Hanford Remedial Actions and to be available and used in other processes and decisions for which it is relevant.

Appendix B

**Letters of Commitment From The Environmental
Protection Agency, The Department of Energy,
The State of Washington, and The State of Oregon**

APPENDIX B

Letters of Support and Commitment:

Environmental Protection Agency,

State of Oregon,

State of Washington

and

U.S. Department of Energy

Working Group members received the attached letters, acknowledging the importance of the Group's undertaking and expressing appreciation to the members for their willingness to participate. The letter from Mr. Leo. Duffy, on behalf of the U.S. Department of Energy, specifically committed Energy to using the results developed by the Working Group in preparation of the Hanford Remedial Action EIS.

Environmental Protection Agency:

Letter of March 30, 1992 from Dana A. Rasmussen, Regional Administrator

State of Oregon

Letter of April 2, 1992 from Michael W. Grainey, Director of Legislative Affairs

State of Washington:

Letter of April 2, 1992 from Governor Booth Gardner

U. S. Department of Energy

Letter of February 26, 1992 from Leo P. Duffy, Assistant Secretary for
Environmental Restoration and Waste Management



MAR 30 1992

Reply to
Attn of: HW-111

Dear Working Group Member:

I want to thank you for joining the Hanford Working Group on Future Site Uses. The future of the Hanford Site is a matter of great importance to all of us in the Northwest.

The transition of Hanford has been a difficult one - from a nuclear weapons production facility just recently, to a site focused on cleaning up the problems of the past, to an uncertain future.


The future of Hanford is linked in important ways to the cleanup investigations and work being carried out at the site today. It is important for those with a stake and an interest in the future of Hanford to join together to discuss what that future might be. You have been asked to join together with other representatives of people in the Northwest to discuss these most difficult and important issues.

The U.S. Environmental Protection Agency (EPA) is enthusiastic and fully committed to the process. I want to pledge to you the support of EPA for this project. Together with the Washington Department of Ecology, EPA is one of the two agencies regulating the Department of Energy's (DOE's) cleanup at Hanford. EPA's role in overseeing DOE's Superfund work makes us especially interested in this future site use project.

EPA's representatives will be Randy Smith, Director of our Hazardous Waste Division, and Paul Day, our Hanford Project Manager. Together they represent both a management and an expert perspective on the Hanford cleanup.

I look forward to hearing about the progress you are making. Best of luck as you begin this exciting work together.

Sincerely,


Dana A. Rasmussen
Regional Administrator



STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

OLYMPIA
98504-0413

BOOTH GARDNER
GOVERNOR

April 2, 1992

[Name of Working Group Member]
[Affiliation]
[Address]
[City, State and Zip]

Dear [Name of Working Group Member]:

Thank you for agreeing to serve on the Hanford Site Use Working Group.

The Hanford site is in transition. The land, facilities, and people at Hanford make it a regional asset. We need to maximize its future benefits, both for the nation and the Northwest.

Cleanup and environmental restoration at Hanford are critical to realizing its future potential. A rich and complex vision of Hanford's future will provide both meaningful direction and increased support for cleanup. In taking the first steps to create that vision, you are performing an important service to the people of Washington and the Northwest.

I encourage you to be bold in proposing alternative future site uses, to listen to each other, and to maintain a vigorous dialogue with those whom you represent. This time of transition at Hanford, together with the investment being made in environmental cleanup, provides a rare opportunity to enhance the region's resources. I trust, when Northwesterners look back a quarter of a century from now, they will recognize your foresight. They will see in your work the foundation of a widely-shared vision that not only sustained a long-term cleanup, but also enhanced the scientific, economic, environmental, and human quality of life.

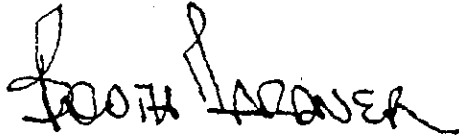
Jeff Breckel will keep me fully informed of your progress. I have asked all interested state agencies to work through Jeff to provide

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whatever information or technical support you may need to formulate alternative future visions for Hanford.

Again, thank you for contributing your time, talent, and energy to this unique effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Booth Gardner". The signature is stylized with a large, looped initial "B" and a long, sweeping underline.

Booth Gardner
Governor

cc: Mr. Jeff Breckel



Department of Energy

Washington, DC 20585

February 26, 1992

Dear Working Group Member:

The Department of Energy seeks your views on the Hanford Future Site Use/Cleanup Scenarios. This is an excellent opportunity to reach out to all who are interested in potential future uses of the site and how they might affect cleanup strategies and priorities.

The Department supports this activity for three major reasons. First, it will give all of us the opportunity to share with each other our knowledge of the site, its history, and the implications of that knowledge on cleanup. This is important so that discussions can be held with a common information base.

Second, Hanford cleanup will be a visible and important activity for many years in the Pacific Northwest. Knowing where our individual visions share common ground will help us prioritize and implement cleanup actions.

Third, Hanford cleanup will be complex. Understanding the relationship between potential future site uses and how clean specific areas of the site should be is critical to its success. The Department needs the ideas of all those affected and interested in cleanup in order to make sound, responsible, decisions.

This process will allow the many views in the Pacific Northwest to be heard and considered. We plan to use the results as we prepare the Hanford Remedial Action Environmental Impact Statement and will show you how we have done so.

John Wagoner and I both strongly support the goals of the Working Group. We look forward to sharing this process with you. Your participation will contribute to our process to formulate the future land use/clean-up strategy for the Hanford site. Thank you for agreeing to participate.

Sincerely,

A handwritten signature in black ink, appearing to read "Leo P. Duffy", is written over the typed name.

Leo P. Duffy
Assistant Secretary for Environmental
Restoration and Waste Management

Date: April 2, 1992

To: Hanford Future Site Use Committee

From: Michael W. Grainey, *MD* Director of
Legislative Affairs

Subject: State of Oregon Position on Future
Hanford Site Uses

DEPARTMENT OF
ENERGY

Introduction

The State of Oregon is vitally interested in and affected by the efforts to effectively manage and clean up the nuclear weapons wastes at the Hanford site. We see the Hanford Future Site Use Project as a useful tool to expedite cleanup efforts. We also see this project as an important effort to implement the intent and the timetable of the Hanford Tri-Party Agreement, namely, to assure successful cleanup by 2019 and to assure full compliance with applicable federal and state laws.

Oregon's Major Issues

The State of Oregon has four major interests in the successful cleanup of nuclear weapons wastes at Hanford. Each of these issues will have impacts on the public health and safety of Oregonians.

These are issues that have been identified and reviewed extensively by Oregon's Hanford Nuclear Waste Board in public meetings and hearings in Oregon since its creation by the 1987 Oregon Legislature. The Hanford Nuclear Waste Board is Oregon's policy forum on Hanford issues. The Hanford Nuclear Waste Board is composed of citizens and legislators appointed directly by Governor Barbara Roberts.

The Hanford Future Site Use Project can be an important forum for assuring that Oregon's issues are adequately addressed. These issues are:

1. Oregon's first concern is the preservation of the Columbia River. Oregonians, as well as Washingtonians, are vitally affected by the well-being of the Columbia River. Oregonians rely upon the river for drinking water, for commerce, for agriculture, for recreation, for fisheries, for transportation and for tourism. Hanford activities which threaten the integrity of the Columbia River directly, or indirectly through groundwater contamination, must be eliminated.

BARBARA ROBERTS
Governor



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2. Another vital concern is transport through Oregon of radioactive materials to and from Hanford. Shipments travel by river, rail and along 200 miles of Oregon highways. We believe such transport can be safe, but the US Department of Energy (USDOE) must work with Oregon and the local route communities.

It is imperative that the U.S. Department of Energy work with Oregon and our local communities to train and properly equip emergency responders in the event of a transport accident. USDOE must also work with the State on accident prevention measures including prior notice of shipments, considering adverse weather conditions when scheduling shipments and undertaking other measures to enhance safety.

3. Oregonians, as well as Washingtonians, could be adversely affected by an accident at Hanford that might release radioactive materials off-site. Oregonians who live in Umatilla and Morrow Counties could be directly affected by offsite releases. Oregon agriculture and recreation interests in the region and the Columbia River could be adversely affected.

4. Finally, one of Oregon's Indian nations, the Confederated Tribes of the Umatilla Indian Reservation, is subject to all the potential impacts listed above. The members of the Confederated Tribes are affected in a unique way because of their proximity to the Hanford site and their location on the major transport corridor. Also, there are special issues arising from the Treaty of 1855 regarding tribal rights impacted by the federal use of the Hanford site. These rights include future tribal use of previously ceded lands and other issues.

The State of Oregon supports the Confederated Tribes' efforts to assure that their treaty rights are honored by the US Department of Energy. Activities at Hanford must not adversely affect the health, safety and economic well-being of the members of the Confederated Tribes.

Importance of the Tri-Party Agreement

The State of Oregon strongly supports the cleanup of the nuclear weapons wastes at Hanford as required by the Tri-Party Agreement. The Tri-Party Agreement outlines a comprehensive and realistic plan for cleanup.

We recognize that not all cleanup questions are explicitly addressed by the Tri-Party Agreement, but the Agreement establishes a framework for assuring that Hanford cleanup and

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April 2, 1992
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waste operations will meet the requirements of RCRA, CERCLA and other federal and state laws. The Hanford Future Site Use Project can provide a useful forum to assure the Tri-Party Agreement is effectively implemented. It can also help assure that future land use decisions are consistent with the Agreement.

Oregon's Participation in the Hanford Future Site Use Committee

Oregon believes that the Hanford Future Site Use Project is important to the cleanup effort. Consequently, Oregon will devote special expertise to this group. In addition to my participation, Ralph Patt and Bob Robison will be actively involved for the State of Oregon. Their professional expertise reflects the issues that are important to Oregon and they will make an important contribution to the Hanford Future Site Use Project.

Ralph is a hydrogeologist at the Oregon Water Resources Department. He has devoted years to studying the Hanford site for Oregon. Ralph is an expert on the issues that can affect the Columbia River and the groundwater aquifers.

Bob is a Senior Nuclear Waste Transport Analyst for the Oregon Department of Energy. He has worked with local governments for many years on the handling, storage and safe transport of hazardous materials and on emergency response preparation and training. Bob is a nationally recognized expert in the fields of transport safety and emergency response preparation.

Conclusion

Oregon believes that land use decisions are best decided by the local communities and other affected citizens, the State of Washington, the Indian nations and the U.S. Department of Energy. Those decisions must be consistent with the cleanup effort outlined by the Tri-Party Agreement and must not adversely affect Oregon's interests. Oregon will actively support those decisions on future Hanford site uses if they help the cleanup effort.

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Appendix C

**Basic Information About The Hanford Site
Used By The Working Group**

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BASIC INFORMATION ABOUT THE HANFORD SITE USED BY THE WORKING GROUP

Background

At the April 2-3, 1992 Working Group meeting, members identified topics, questions and issues on which they felt it was important for the Working Group to have a common base of information. In response to the information needs identified, the following approach was agreed upon for presenting information. "Baseline" information would be provided in three areas:

- Explaining the historical context within which the current situation at Hanford has arisen and parameters for release of land in the future;
- Describing the location, nature and extent of known contamination and technologies to address it; and
- Identifying the many decisions that affect the site.

The information provided was to focus on 7 distinct geographic areas within the site identified by the Working Group.

A series of technical panels and presentations were organized for subsequent Working Group meetings to address the identified topics and issues. Presentations and/or panels were organized for the following topics:

- Native American Uses of the Hanford Area and the Treaties of 1855
- European Settlers' Use of the Hanford Area
- Federal Acquisition of the Hanford Site
- Development of the Local Economy and Population
- Contamination Primer
- Technologies to Address Contamination
- Environmental Monitoring
- Decision-Making Related to the Hanford Site
- NEPA/Hanford Remedial Action EIS
- Growth Management Act
- GSA Process for Release of Federal Land

Key findings from the panels and presentations are attached in the Appendix. Greater detail can be found in the summaries of the Working Group meetings of May 14, June 25-26, July 9-10 and September 17.

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Native American Uses of the Hanford Area and the Treaties of 1855

The information below summarizes presentations made to the Working Group on May 14, 1992 on Native American uses of the Hanford area and on the Treaties of 1855. Speakers were Louie Dick of the Board of Trustees of the Confederated Tribes of the Umatilla Reservation, Russell Jim, Manager of Environmental Restoration/Waste Management of the Yakima Indian Nation and Professor Ralph Johnson of the University of Washington Law School. Key points from written information provided by Professor Johnson are also incorporated.

Tribal Uses of the Hanford area

The Hanford area has been used by the indigenous peoples for thousands of years. The tribes who once roamed to Canada, western Montana, northern California and the Pacific Coast chose this area for wintering because it was the lowest area geographically in the eastern half of the state with abundant food (both fish and wild animals), medicines and water for travel. Annually, there were migrations of people living off of the land from this area but the elderly and handicapped and those who looked after them lived in the area year-round and fished for trading. All of this was "open and unclaimed land."

In recent years, the tribes and others have become aware of the releases of hazardous materials that have occurred at Hanford. Because of the role that the native foods and medicines play in their culture and religion, the tribes feel it is critical that the environmental damage that has been done be cleaned up and the site restored such that the level of contaminants is returned to background levels. They recognize the need for a stable ecosystem that will provide them with the ability to retain their cultural traditions and practice their religion. Native peoples want assurance that the area is safe; such a warranty will benefit not only native peoples but the entire region's population and future generations.

U.S. Policy toward Native Americans

U.S. policy toward Native Americans, prior to 1887, was to establish Indian reservations and settle the Indians on the reservations. Between 1887 and 1934, U.S. policy became one of assimilation. Under this policy Native American children were removed from their homes and sent away to schools where it was forbidden to speak their languages or practice their traditional customs. Traditional means of Indian dispute resolution were systematically destroyed. An allotment policy was also put into place in an effort to turn Indians into small-time capitalists, each on their individual farms. At the beginning of this period, Indians owned about 152 million acres. Between 1887 and 1934, Native Americans lost two-thirds of those lands.

In 1934 Congress reversed the 1887 policy and adopted a policy of self-determination but, during the Depression, much of this policy was not implemented. Tribal courts were created after 1934 and now there are about 130 tribal courts on reservations. They operate on the basis of inherent sovereignty; it does not come from the United States. In the period 1950-1960, Congress changed course again and moved to terminate Indian tribes as governing units. Over 100 tribes were terminated and states were given jurisdiction over the reservations. Many former reservation-owned lands were sold to non-Indians; as a result, land ownership on many reservations looks like a checkerboard.

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In 1960-1965 Congress changed policy again, and since that period, the prevailing policy toward Native Americans has been one of self-determination and economic self-sufficiency.

There are about 260 Indian tribes with reservations in the US. In Washington State there are about 26 recognized tribes. They own 7% of the state's land. (For the US as a whole, Indians own 2% of the land, or 52 million acres.) The tribes are generally governed by Tribal Councils, headed by a Tribal Chair, -- institutions which are similar to non-Indian political structures. In addition, there are decision-making, cultural and religious activities that exist on most reservations side by side with the political structures.

Treaty of 1855

In 1855 treaties between a number of Northwest tribes and the U.S. government were signed by Governor Stevens, who was both the Indian agent and an agent representing the railroads.

In the treaties of 1855 the Native Americans gave up their claims to all of Washington and Oregon after being assured that they would have off-reservation fishing rights in "usual and accustomed places," a right they shared with other citizens of the territory. These rights were considered essential for the survival of the local tribes. With no translators present who familiar with all of the many Indian languages, these treaties were negotiated in the "Chinook jargon," a very limited language of only 300 words used for trading. Since that time, U.S. courts have ruled that where there is ambiguity in understanding the treaty language, the meaning shall be understood as the Indians understood it.

When the Hanford Reservation was established, there was no compensation for the Yakima for the land taken, such as was given to the non-Indians.

Legal Issues related to the Treaties of 1855

The courts have not yet ruled on the meaning of "*open and unclaimed lands*," so there is no standing legal opinion about them at the present time. It does appear that members of signatory tribes have a right to hunt on "open and unclaimed land" of the ceded areas. This almost certainly allows Indians to hunt on BLM or national forest lands. It may allow them to hunt on National Park lands and possibly on large tracts of privately owned land, to the extent that it is not actually occupied by residences or farms.

The issue of *state jurisdiction over reservation lands* was addressed in *Worster v. Georgia* (1832) where the U.S. Supreme Court ruled that state law did not apply to reservations unless Congress specifically indicated that it did. Usually federal and state laws do not apply unless Congress says they do. This interpretation has remained dominant.

Concerning the *sovereignty of Indian tribes*, the basic interpretation has been that Indian tribes are sovereign entities, not subject to state law *unless* Congress says so. Federal law ordinarily does not apply to Indians unless Congress specifically indicates that a law applies to them. Some laws, however, which the Congress wants to see in force everywhere and which are of a fairly universal nature (income taxes, environmental laws) do apply. The last time that the Indians were treated with full powers of sovereignty was at the signing of the treaty so they could cede their lands but after that they have been denied full power of sovereignty by acts of

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Congress. They do have broad self-governing rights.

In 1855, all the land of this area was *public domain land*: this meant that the U.S. claimed ownership of this land as public domain, that is, it had not been set aside for any special purpose. Now there is relatively little public domain land anywhere in the country. With respect to the Indians' rights to go on the present Reservation, one must look at the legislation that created the Reservation. The Congress took the land over and built the facility and did not take into account the impact on the Indian tribes or their rights. If the land goes back to public domain status, surely it would become subject to treaty rights to fish in the "usual and accustomed" fishing sites and to gather and hunt on open and unoccupied land. However, it is difficult to predict that the land would go back to public domain status. Congress will determine what its status will be and Congress can say whatever it wants.

Treaty rights exist through time. Whether they are being used at a given time or not, the rights themselves would be preserved. Indians believe that the treaty has an implicit assumption that it included provision for the culture of the tribes to thrive. They consider that the treaty is a binding contract between the Indians and the U.S. Government. They look at the treaty to mean for all time, not from one year to the next. However, the U.S. Supreme Court has many times held that Indian treaties can be abrogated by Congress, provided that compensation is paid for the taking of Indian property or property rights, including fishing rights.

European Settlers' Use of the Hanford Area

Annette Heriford, local historian and member of the Benton County Historical Society, grew up near the town of Hanford and lived there until it was converted to the Hanford Reservation in 1943. On May 14, 1992, she presented a slide show and answered questions on the settlers who lived in the area prior to 1942.

In the latter half of the 1800s European settlers were gradually attracted to the mid Columbia region. An irrigation project, initiated by Judge Hanford, permitted hundreds of acres of farming and orchards to develop. The area's mild climate encouraged many to grow fruit which ripened up to 15 days earlier than that of any other areas in the country. It was then shipped all over the world, first by sternwheelers that plied the Columbia River, later by railroads.

Two small towns, White Bluffs and Hanford, were established and grew. A 1930 census indicates that there were 1,199 people, including rural population in the surrounding areas. Local schools, churches, sports and picnics along the Columbia River were the primary forms of social activities and leisure. Hardworking local residents generally prospered until the Depression of the 1930s. When World War II came, a large number of local young men enlisted to serve the war effort. When the Hanford Reservation was created, local residents were given very little notice they would have to sell their land and move away from their farms and property.

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Federal Acquisition of the Hanford Site

Charles Pasternak, Department of Energy real estate and cultural resources specialist, provided the following information to the Working Group on May 14, 1992.

In May, 1941, the U.S. Government issued a proclamation (#2487) that stated that the United States was in a position of an unlimited national emergency. All subsequent actions by the federal government relating to the acquisition of the Hanford site cite this proclamation as the basis for what occurred.

In February, 1943 the War Dept. established the "Gable Project" in Pasco, Washington, authorizing the Army Corps of Engineers to acquire approximately 447,870 acres of land (about 700 square miles) for a top-secret military facility. Some lands were to be acquired outright; others were to be leased. Just over half of the land was not on the tax roles at the time; they were owned by federal, state and county governments, by public utility and irrigation districts, railroads and the like. Lands owned by the federal government were public domain lands. In June 1943, authority was granted to transfer these lands from the U.S. Dept. of Interior to the War Dept. and over time various amounts of public domain lands were so transferred. By the fall of 1943, the site, which is not significantly different from the present site, consisted of public lands in addition to lands that the federal government had purchased or leased. The initial purchases occurred in great haste and subsequent legislation and actions were taken to ensure their legality.

Richland, which still existed throughout the war years, was dissolved by court order in 1948. During the war it was under military control and only those working on site were allowed to reside there. In 1958 Richland gained independence from federal control and was allowed to reincorporate through the Atomic Energy Communities Act.

At various times, in the late 1940s and 1950s additional lands were leased and then subsequently released by the Atomic Energy Commission (AEC), which after the war took over management of the site from the Army Corps of Engineers. Lands held in fee as well as public domain lands were transferred to the AEC.

By 1958 the site had reached the approximate size it is today. While the boundaries did not change much subsequently, the status of some of the land changed; for example, some was transferred from the AEC to the Dept. of Interior. In the 1960s some lands were exsessed through the General Services Administration (GSA) and sold to various entities (Battelle, Douglas Aircraft); other land was transferred to the Bureau of Land Management. In 1971 a use permit was issued to the Washington State Dept. of Wildlife and the U.S. Fish and Wildlife to manage the Wahluke Slope.

Between 1971 and the present, 1,671 acres have been released through GSA.

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Development of the Local Economy and Population

Information about the development of the local economy and population during the period 1942-1972 was provided to the Working Group on May 14, 1992, by Michele Gerber, Westinghouse Hanford Company historian. Dean Schau, Economics Instructor at Columbia Basin College and regional economist with the Washington State Employment Security Dept., then traced the evolution of the economy and population from 1972 to the present. Joe King, City Manager of Richland, provided information on employment data by place of residence.

Local Economy and Population, 1942-1972

The great depression of the 1930s hit the area very hard. In 1931 the average net income for a farm family in Benton County was \$31.00 per year. Over 50% of the farms in Franklin County were foreclosed or abandoned during the 1930s. Only 10% of the farms had electric power at the beginning of WWII. Construction of Grand Coulee Dam was a major local employer and contributed to the slight economic improvement that was occurring in the area by 1940.

In the 1940s, the Hanford Project came on the area very suddenly and led to a quadrupling of the local population and rapid increase in the development of roads, electrical transmission lines, facilities and other key services. At the end of the war, there were about 10,000 workers in operations. All this activity brought unprecedented prosperity to the area. It also brought local economic dislocations: the high level of the Hanford wage scale led to an acute shortage of farm labor which, in turn, led to the first deliberate importation of Mexican migrant workers to harvest the crops. Finally, there also came an acute shortage of hospitals, schools, housing and recreational facilities.

Hanford consumed over half of Benton County's land, constricting the county's tax base. The project also withdrew lands previously planned for inclusion in the Columbia Basin Irrigation Project.

Immediately following the war came the first in a series of "busts" that followed "boom" periods resulting in "roller coaster" economic cycles. In 1946 the region saw Hanford's first site-based recession, in which half of the workers (5,000) lost their jobs in 15 months. Then, in 1947, the region experienced a huge economic boom as the Atomic Energy Commission decided on a huge expansion of the Hanford Works (its postwar name), the largest peacetime construction project in American history to that point.

1950-55 saw another double expansion at the site which led to a huge boom. Hanford's payroll of \$32 million in 1950 grew by 1955 to \$55 million. By 1955, federal investments in plants and facilities at Hanford totaled more than \$1 billion. Prosperity continued in the years 1956-63, Hanford's peak years of production and continuing local economic prosperity. Operations jobs stabilized at about 10,000 workers; approximately 40% of Benton County's total employed work force was employed at Hanford.

By 1963 agriculture and food processing employed about 10% of the employed labor in Benton County, somewhat more in Franklin County. Between 1964 and 1972 employment at Hanford declined and in 1971 it had reached its lowest level since 1947. However, diversification was

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being actively sought and was having effect so employment levels did not experience a drastic drop. Many new companies (both Hanford and non-Hanford related) located in the area, creating construction and then operations jobs. By the end of 1971, \$40 million in private capital had been invested in diversification. As a result, in the early 1970s the region's economy had stabilized and was less dependent on Hanford. Population was stable at about 100,000 people.

Local Economy and Population, 1972-1992

The 1970s were another "boom" period for the Tri-Cities area in part because of the Washington Public Power Supply System and its nuclear power projects. Between 1972 and 1981 the number of jobs more than doubled and the local population grew by about 60%. Then in 1981 those figures plunged with cutbacks at the Supply System. Unemployment figures rose to 15%, declining later in the decade primarily as people left the area.

By the end of the 1980s the local economy began slowly to rebound, in part because of positive changes in local farming and food processing. However, in the most recent years, the number of nonfarm jobs has begun to increase significantly; they are up by 10,000 since the end of 1989. Employment has now rebounded to that of the Supply System peak. New construction is booming and rental vacancy rates are at record lows. The cause of this economic upturn is largely the expanded employment base at Hanford, as employment by DOE and its contractors has risen by over 3000 jobs since March, 1989.

At present, Hanford provides roughly 1 in 4 jobs for the community but generates about 42% of all payroll dollars (about \$645 million). By contrast, the local farming sector provides about 8,800 jobs and a combined payroll of \$78 million. Food processing, which is a growing locally, employs about 3,200 workers and a payroll of \$64 million. These, in turn, generate additional jobs and payrolls.

Employment Data by Place of Residence

Unofficial data on places of residence for Hanford employees indicated that, for many communities, the numbers were large both in absolute and in relative terms. As a result, changes in employment levels at Hanford have immediate impacts on local communities.

Contamination Primer Panel

Presentations were made by Don Wodrich, Manager of Technology Integration for Tank Waste, Westinghouse Hanford Company, on sources of the contamination; by Julie Erickson, Branch Chief, Environmental Remediation, Department of Energy, on surplus facilities; by Doug Sherwood, environmental engineer, U.S. Environmental Protection Agency, on buried wastes; by Todd Martin, staff researcher, Hanford Education Action League, on tank wastes; by Larry Goldstein, CERCLA unit supervisor, Washington Department of Ecology, on migration of contaminants; and by Tim Connor, Energy Research Foundation, on the significance of the foregoing information for future site use.

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Sources of Waste.

During the operating history of nine production reactors, two test reactors, and several processing plants, a total of 100,000 tons of fuel was reprocessed, primarily in the 1950s and 1960s. This fuel reprocessing produced most of Hanford's waste. All of the production and test reactors are now shut down.

Most (98%) of the radionuclides were generated in the 100 Area reactors, and most (82%) are currently stored in the 200 Area in 177 waste tanks and 1,900 strontium and cesium capsules. (These "capsules" are cylinders of metal about 2 by 20 inches containing highly radioactive, heat-generating strontium and cesium isotopes.) Single-pass cooling water formerly released from reactors contributed strontium to the river, sediments, and shoreline area.

Surplus Facilities.

More than 100 of the 900 facilities on site have been declared surplus, including 73 that are contaminated. Most of these surplus facilities are in the 100 and 200 areas. Examples of surplus facilities include retired reactors, chemical processing plants, and support facilities. Some decontamination and decommissioning (D&D) activities have already occurred, especially in portions of the 100 Area.

Planning of D&D activities assumes the following:

- Facilities will be maintained in safe condition until decommissioning.
- Decommissioning of about 100 facilities will be completed by year 2018.
- D&D is integrated with waste management under the Tri-Party Agreement.
- Waste generated will be mostly low level.
- Residual contamination allowable after decommissioning will be calculated using the pathway analysis methodology.
- Low level waste will go for disposal to the 200 Area burial grounds, if not managed in place.
- Radioactive waste will not be decommissioned in place, but will be handled in compliance with DOE requirements.
- Materials or equipment removed or salvaged will meet the then-applicable regulatory standards.

The Reactor Decommissioning Final Environmental Impact Statement, which addresses 8 of the 9 reactors, is in printing and will soon be released. (The N reactor has not been declared surplus.) It was noted that the B Reactor has been listed on the National Register of Historic Places.

Buried Wastes.

Buried radioactive waste consists of trash and contaminated soils; it is classified into three types. Low-level waste is landfilled. Higher-level waste (which must be handled remotely) is disposed in trenches or caissons. Transuranic (primarily plutonium-contaminated) waste is disposed in two ways. Before 1970, the disposal practice was landfilling. Since 1970, it has been retrievably stored in stacked drums on asphalt pads. Total volume of all types is 830,000 cubic yards. About 20% of this total is transuranic waste, and 10% of the transuranic waste was generated after 1970 and is retrievably stored.

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Buried solid (non-radioactive) wastes are present in two types of sites: solid waste sites like municipal landfills and burn pits (used for construction debris, etc.).

Information was provided on locations of buried radioactive and non-radioactive waste sites in the 100, 200, and 600 Areas. The only active solid waste landfill is the Central Landfill Complex, located 3 miles southeast of the 200 Area. While information on buried radionuclides is good, the information on the location and quantity of hazardous (non-radioactive) wastes is sketchy.

Tank wastes.

Three issues associated with tank wastes that relate to future site use were identified as (1) tank leaks and resultant soil contamination under the tanks; (2) the 177 tanks themselves, and (3) residual waste left in the tanks after cleanup.

Of the 177 waste tanks on the Hanford site, 86 are located in the 200 West area and 91 are located in 200 East area. There are 149 single-shell tanks (built 1943 to the late 1960s), and 28 double-shell tanks (built after the late 1960s). Collectively they contain a total of 65 million gallons of material in the form of liquids, sludge, and salt cake. Serious consideration is being given to building 12 additional double-shell tanks in an uncontaminated area between the 200 Areas.

There are 66 known leaking tanks, all single-shell tanks. The DOE estimate of total leak volume is 750,000 gallons, although there is controversy about this estimate, especially regarding the quantity of cooling water added to the tanks, and what this implies for total leak volume.

There are 53 tanks on the safety "watch list." The four major safety issues relate to the tanks are the presence of hydrogen gas, ferrocyanide, certain organic compounds, and plutonium. There are three tanks on the watch list because of the possibility that a critical mass of plutonium may be present. To date, researchers have been unable to adequately assess how much plutonium is in these tanks.

How much waste will be left in the tanks after cleanup? If one assumes grout and vitrification technologies will be used, then waste must be retrieved from the tanks. A retrieval demonstration for double-shell tank waste (to be done by 1997) is targeted to show 90% of waste could be adequately removed. The 1987 Hanford Defense Waste Environmental Impact Statement required 99.5% removal from tanks. Even 99.5% removal would leave thousands of gallons of waste in many tanks. It is assumed that a significant amount of waste will also remain in the single-shell tanks after cleanup.

Groundwater contamination

Groundwater contamination has resulted almost exclusively from liquid effluent discharges throughout Hanford's history. Contamination has occurred as a result of reactor operations (100 Area), irradiated fuel reprocessing (200 Areas), fuels fabrication (300 Area) and equipment and maintenance (1100 Area).

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Contaminants of concern include sodium dichromate, strontium 90, nitrate and nitric acid, carbon tetrachloride, ferrocyanide, uranium, technitium 9, tritium, and trichloroethylene. He noted that the current estimate of carbon tetrachloride contamination at the 200 West area is about 1,000 metric tons. Carbon tetrachloride migrates as a vapor above the groundwater (i.e., in the vadose zone). It can therefore migrate in any direction, and does not follow groundwater flow patterns, and then deposits in the groundwater. An "expedited response action" is in progress to remove the carbon tetrachloride from the vadose zone. Also, in regard to the uranium plume in the 300 area, he noted that an expedited response action was undertaken last fall (1991) to isolate contaminated material in the 300 area process trenches.

There are estimates that up to 80% of ⁹⁰strontium from groundwater to Columbia River is from N-springs, which suggests that the continuing source of strontium is N-springs.

Migration of contaminants.

Once the discharge of liquid effluents to the soil column has ended, the biotic component may be the biggest source of migration of contaminants in the soil column.

There are two basic habitat types on the Hanford Site: shrub-steppe (7 different plant communities), and the riparian zone along the Columbia River (willow plant community). Examples of environmental pathways for migration of contamination include the following: swallows and wasps using radioactive mud to build nests; ingestion of radionuclides from on-site ponds by waterfowl (mallards); badgers and harvester ants that burrow into waste sites (this also creates pathways for infiltration of rainwater); and deer and rabbits ingesting contaminated vegetation and the potential that these animals could then be consumed by humans. Also, eggshells of Canadian geese from islands in the Columbia appear to have accumulated ⁹⁰strontium.

Off-site contamination currently occurs by two main pathways, both emanating from the 100 Area. Last year about 38 curies of tritium and 2 curies of ⁹⁰strontium were released to the Columbia River via direct discharge. Indirect discharge of contaminated groundwater occurred from about 40 seeps along the River, with highest measured levels of ⁹⁰strontium of about 3000 pCi/l. "Bank storage" describes a phenomenon whereby water is stored and released in the bank of the river as the water elevation fluctuates.

Data gaps in this area are significant but, as was pointed out, data gathering efforts have not typically been tailored to cleanup problems. The extent of contamination as it affects the biota has never been adequately quantified. An example is the lack of knowledge as to why there was a decline in the number of red-tailed and swainson's hawks nesting on site in 1990. Efforts are underway to refocus data gathering efforts to aid good technical decisions on risk. For example, agencies are now reviewing data to clarify background levels of contamination in soil and groundwater. According to federal law, Energy must conduct an assessment of risks to help in selection of cleanup alternatives. The Department of Ecology, as natural resource trustee under the federal CERCLA law, must conduct damage assessment. Each of these responsibilities requires extensive data and complex analysis.

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Tim Connor's Comments on Implications for Future Site Use

On the positive side, waste sites on the Hanford Site are localized relative to the total site. This allows the site to be broken into more units and to permit consideration of a more complex array of future use scenarios than would be the case if wastes were uniformly distributed throughout the Site.

On the negative side, the number of waste sites and the sheer volume of waste, both known and unknown, are large. For example, in deactivating a cooling pond in February 1985, an unexpected, significant level of uranium contamination was discovered. Upon investigation, it was determined that because of the area's soils and geology, water had migrated laterally where it mobilized uranium in the soil, then encountered an abandoned, unrecorded reverse well which allowed access to the groundwater.

In regard to uncertainty, at present there can be no absolute guarantee to future users that the site is safe. The mission is first, to reduce uncertainty as much as possible without emptying the U.S. Treasury, and second, to accommodate residual risk and the perception of that risk by future users.

Hanford's geology was partially shaped by catastrophic floods at the end of the ice-age which deposited a mound of sediments on the Hanford Site up to 300 feet thick on top of the old lakebed underlying Hanford. These sediments allow water to travel through them much faster than the lakebed layers. Thus, when groundwater rises to this sediment level, much more migration of contamination can occur. This is important to consider for any scenario affecting future groundwater at Hanford. This includes the possibility of "time bombs sitting in the vadose zone" (the unsaturated zone above the water table).

Technologies to Address Contamination

A panel of speakers on technologies to address contamination included Rick Wojtasek, Westinghouse Hanford Company's Manager of Environmental Restoration Programs, Steve Stein, Deputy General Manager of Battelle Environmental Management Operations, Paul Day, EPA, Chris Whipple, Chair of the National Academy of Sciences' Board on Radioactive Waste Management, and Arjun Makhijani, Institute for Energy and Environmental Research.

Identifying Technologies to Address Technical Issues

One of the primary jobs at Hanford has been to identify cleanup technologies for both active and inactive waste sites that would bring the site into compliance with regulations. Since 1983, a cleanup plan for the site has been developed. It identifies by waste types the various technical issues (for example, what to do with the task wastes) and then breaks each issue into a series of tasks. These tasks are then integrated into the site-wide planning process.

Common technical issues associated with all the waste sites include the following:

- Interim management: technologies to employ today to manage the wastes safely until final disposition
- Waste characterization or sampling and analysis.

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- Retrieval of wastes in tanks, contaminated soils, burial grounds
- Waste treatment: retrieval versus stabilization and treatment in place
- Final waste disposal
- An environmental barrier and monitoring system to prevent intrusion by plants and animals into the waste zones.

For past practice waste sites, technologies have been reviewed and existing technologies appear to be adequate to investigate the site. However, improvements in baseline technologies would permit faster and less expensive progress. With respect to cleanup technologies, there are a number of technologies proven for their intended use but they must be shown to be effective at Hanford.

Criteria for selecting among technology options are as follows:

- Worker/public safety
- Long-term effectiveness and risk minimization
- Environmental impacts and regulatory acceptability
- Probability of success in meeting schedules for cleanup
- Cost
- Is it faster than existing?

Most milestones in the Tri-Party Agreement rely on technologies being available at the right time but there are relatively few milestones in the TPA for when appropriate technologies will be available.

Existing Technologies

A variety of existing technologies are available to address liquid effluents and solid and buried wastes: backhoes, X-rays, soil-washing techniques, wrecker balls, drilling, long-term protective barriers to contain contaminants, down-hole geophysics laboratory, pump tests to test aquifers, vapor extraction system, and a waste receiving and packaging facility for mixed wastes (WRAP).

Areas where new technologies are needed relate to tank wastes (both double and single shell) and pretreatment of these wastes prior to disposal. The Tank Waste Remediation System has been put together to address these issues. DOE is currently investigating various approaches (robotics, computer operated systems, mechanical mining, high pressure water jets) through an Integrated Demonstration Project.

Future Technologies

While existing technologies can accomplish a lot of the cleanup, effectiveness, cost, speed and worker safety are driving the search for new technologies. The goals are to destroy or immobilize wastes and to have permanent rather than temporary solutions (although finding interim solutions is recognized as important until permanent solutions can be found).

Since 1983 there has been a national needs identification process; Hanford has a team that can push for local needs within that process. The initial focus for technology development nationally has been toward:

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- Better measurement and analysis
- *In situ* monitoring
- Improved drilling
- Above ground treatment (such as vapor extraction)
- Enhanced retrieval for tanks, buried transuranic wastes and soils/groundwater contamination
- Subsurface barriers

Major initiatives are being made in the areas of mixed wastes, plutonium and uranium, and decontamination and decommissioning. Emphasis in coming years will be on *in situ* remediation in soils and groundwater, in separation technologies and in subsurface barriers that can act as a safety net for interim operations. Current methods to clean up groundwater are to "pump and treat" but they are slow and costly and will not provide the results desired.

The effectiveness of current technologies to clean up surface contamination is much better than technologies for cleaning up contamination 20-30' below ground.

The focus of current efforts is investing in technologies that will help make significant improvements in meeting standards (such as for drinking water). Impediments to implementing new technologies include regulatory requirements, research and development dollars competing with compliance dollars, introducing new technologies into operations, and getting public and regulatory trust.

Arjun Makhijani's Comment on Technologies

The most important issues regarding the cleanup and waste management have yet to be defined. While there is a lot of work underway, there is no assurance the cleanup desired will occur because there are no conceptual standards guiding the cleanup.

Historically, today's waste management solutions have become tomorrow's cleanup problems. The permanence of protection in relation to the longevity and danger of waste is a major issue. No one has yet found a way to dispose of plutonium safely and without generating additional wastes, so there is no safe way to manage long-lived radioactive wastes. Solutions are needed that do not generate further environmental degradation in the future, even the long-term future.

The tanks are a troubling issue. There is uncertainty about what is in the tanks because the wastes have intermixed and chemical reactions have occurred inside the tanks.

The Savannah River vitrification plant, built at a cost of a \$1 billion and scheduled to open in 1990, was to be the model for Hanford but it has never been demonstrated that it will work. A DOE panel (October 1991) concluded that it did not know how to design parts of the vitrification plant, yet huge sums of money are being spent and groundbreaking at Hanford occurred in April of this year. (Similarly, the pretreatment process at Savannah River for cesium 137 is generating fire hazards that were not present earlier so there is no guarantee that approach will work as designed either.) Pilot projects are needed to test technologies and/or for developing contingency plans in case the technologies prove ineffective.

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Similar concerns exist about the prospects for grout as a long-term solution: there are concerns about the pre-treatment technology and whether grout will protect groundwater. A further concern is who will bear liability for these sites after institutional control is relinquished.

There are not appropriate cleanup standards. The technology issues related to groundwater and soils are more grave and fundamental. It is not clear whether the Waste Isolation Pilot Project (WIPP) will ever open and, even if it were to, a concern that glass (Hanford's proposed technology) would disintegrate in Nevada more rapidly than other potential forms. Other waste forms might be more appropriate.

An independent peer review body is needed to assess and make recommendations about technologies, for agreed-upon standards for land use, groundwater protection and soils, and for waste management technologies that do not compromise the permanence of environmental restoration in the areas that are declared to be clean. Waste management issues, which are expensive and anguished and have long-term implications for future generations need to be fundamentally reconsidered.

Land use ought to be dictated by acceptable risks and these are policy rather than technical issues. For example, it is easier to put light industry where surface contaminants have been removed. If groundwater were the contaminant and it could not be used, then exposure would be eliminated.

Many facets of the radioactive waste system are not working appropriately. Until a better system is in place, interim, on-site storage in some stabilized form that will not compromise long-term management seems an appropriate approach. With respect to tanks, it is important to separate short-lived radionuclides from long-lived ones; one can hold the former until they decay but research is needed to figure out how to manage the latter.

Environmental Monitoring

The Hanford Environmental Surveillance Oversight Program conducted by Battelle conducts studies of human exposure through food, fish, water and air. This work is related to Westinghouse's monitoring of effluents and to work that the State of Washington conducts. The program attempts to monitor effects through all the pathways by which man might be exposed: food, fish, water and air. This is done via analyzing effluent data from the operating facilities and modeling pathways through the environment. Environmental measurements are also used.

Many wells have been drilled and are monitored. Some radionuclides are tightly bound with the soil, others, such as tritium, move with the water. Groundwater flows toward the River so the River is heavily monitored, especially at N Springs. Doses from tritium and Strontium 90 are detectable but are far below the drinking water standards and from a health standard are not considered a significant risk.

Additional sampling of air and gases occurs; 1991 results indicated that exposure levels were very low, less than 1% of EPA standards. Agricultural crops, animal products, fruits, vegetables, wheat, and alfalfa are also sampled; recent results indicate that most contaminants

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are at background levels. The exception is iodine 129 which is detectable in milk but is not a health concern.

Wildlife sampling indicates that levels are near background, except in a few areas near the 200 areas. Contamination has been found in the shells but not in the flesh of clams.

Between 1988 and the present, levels of exposure and doses per person in rems have declined.

Risk Assessment and Land Use Planning

Land use planning can be approached from several directions; for example, from the point of view of technical and site characterization. A different perspective would be to consider what is desirable in future and figure out how to get there.

Experience has shown that no waste management plans ever get done via a linear plan where one sits down at the outset and figures out a single plan with a schedule and carries it out. Rather, it is done iteratively: that is, one samples, discovers where assumptions were incorrect, then revises schedules and identifies a new technology need. The Working Group could ask DOE, "What and when can we have it, at what cost and how clean can we get it today, or with technologies expected in 20 years?" In turn, DOE needs to know which future site uses the Working Group finds desirable and which are undesirable.

There has been considerable experience in doing risk assessments and cleanups based on those assessments and risk based standards. For example, the Superfund program includes a definition of acceptable risk. For Hanford, groundwater looks like it is the tough issue. How contaminated is it? Can it be cleaned up? Be aware that a risk definition can be expanded beyond health to include economic risks, such as reduced property values or farm product stigma, which are real, and may make some choices unacceptable.

What are the key uncertainties here? Are surprises likely? Part of the difficulty of dealing with future site uses at Hanford is the history of disclosures of exposures admitted every few years.

Given the fact there is not yet the knowledge of how to "fix" sites well, there is a need to reserve flexibility and to identify alternatives that stay as broad as possible and look for latitude. For example, siting light industry in an area where groundwater is not pumped may be a compatible land use.

The Group could make a linkage between what is going on the list of future activities and what Working Group members want to see happen for the post-weapons period at Hanford. For the short-term, DOE sites are in the cleanup business. From the community's standpoint one could ask, is there some other national mission and is it compatible with current cleanup technology?

Often approaches that were acceptable and legal earlier no longer meet contemporary standards, and in future, this may also be the case with respect to today's standards. Finding the "once and for all fix" may be harder than doing good risk management. But there are a lot of things that can be done to ensure that people are not hurt in both nuclear and non-nuclear hazardous waste sites.

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Addressing groundwater problems can be dealt with in three ways: prevent it at the outset, clean up the site, or, as an interim measure, monitor and treat it at the point of use.

Current approaches to cleanup are "truck, muck and suck." There are clearly opportunities for research and development to provide new technologies but there may also be expectations about r & d that may not be met. One has to be willing to live with uncertainty on some of this. Waiting for all the facts before deciding is a deadend. Doing nothing is also a decision. Ideas of what is important to worry about are always evolving. If 80% of the problem can be solved with obvious fixes, that is real progress. If this can be done without foreclosing options and creating problems that will have to be dealt with 30 years from now, so much the better.

Panel on Key Decisions Related to the Hanford Site

Presenters included Jim Bauer, DOE Environmental Assurance, Permits and Policy Group; Roger Stanley, Manager of Wash. State Ecology's Nuclear Mixed Waste Program; Reed Kaldor, Advanced Sciences, Inc. (Contractor for the HRA-EIS), and Paul Day, EPA. Steve Wisness of DOE was also available to answer questions.

Past Decisions

Past decisions related to the geographic areas identified by the Working Group are as follows:

In the 200 area: Some past decisions have already been implemented which accounts for the number of waste treatment facilities, low-level burial grounds, and cribs in the 200 area. Some decisions have been made that are still to be implemented in the future and therefore those decisions can still be influenced. Questions remain about what to do with PUREX, with PFP, and with other vaults in light of the decision to cease production of nuclear materials at Hanford. There are many retired and surplus facilities, some of which are in the decommissioning and decontamination process.

Many of the key decisions waiting to be implemented are reflected in the TPA, such as building a waste receiving and packaging facility to handle transuranic and future waste. Also in the planning phase is the high-level waste vitrification plant, for which ground was recently broken. A pretreatment plant is needed to separate the tank wastes but its design and where it will be located have not yet been determined. These facilities are currently planned for the 200 area.

Washington State's 1000 acres of leased land is presently subleased to US Ecology for commercial low-level burial ground. Continued or additional use is to be decided. The 200 Area may see a lot of future activity.

Reactors on the River: Study is currently underway on what to do with the retired reactors: whether to monitor or to move them. An EIS is being prepared which will address these issues and possible future use of the land. The Hanford Reach study may also impact what the land can be used for and how quickly things will have to be remediated.

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Scattered Sites: There are a number of buildings that could be used for future testing and laboratories. There are waste sites scattered around some of these facilities that will be cleaned up via the TPA and/or CERCLA.

North of the River: In the past, this was a security and buffer zone; there are some facilities from military sites in the 1950's-1960's. Most of that land, through use agreements, has been allowed to be used by the State and by the Dept. of Interior. Waste sites there are to be cleaned up under the TPA, RCRA and CERCLA. The Hanford Reach study may also impact this area.

ALE Reserve: Its designation and agreements currently restrict use of the land. There may be a few waste sites to be remediated through the TPA, RCRA and CERCLA, after which the area should return to its natural state.

Other Areas/Designations:

Washington State's Square Mile is deeded to the state, with the restriction that it could only be used for disposal of extremely hazardous materials. The Hanford site as a whole, like several other DOE sites, has been designated a National Environmental Research Park, to allow long-term scientific studies.

Columbia River: One of the key decisions has been congressional action authorizing study of the river for potential inclusion in the national Wild and Scenic Rivers Act, which could potentially restrict its use as well as the lands along the river.

Tri-Party Agreement (TPA)

The TPA began to take shape in 1983 when Washington State began to implement federal hazardous waste statutes throughout the rest of the State. Prior to that time there had been little or no communication between the State and Energy concerning hazardous waste management. In the period 1985-87, the State's statutory authorities to regulate hazardous and radioactive wastes began to be recognized and EPA began to act on Section 120 of the federal Superfund statute which required EPA to work with other federal agencies to develop federal compliance agreements. It also became clear that a consensus was needed on how to address the contamination at Hanford if progress was ever going to be made. The State and EPA then entered into negotiations with Energy to discuss what would constitute the cleanup at the Hanford site. These negotiations took about 14 months to complete.

The TPA is an enforceable agreement that lays out schedules for compliance. It is also a living document among the three parties that is expected to evolve continually. The agreement itself is divided into 2 major sections: the legal language describing the agreement and an Action Plan that describes processes and schedules for cleanup. The TPA schedule is designed to have cleanup occur by 2018 but there is no termination date in the agreement. It covers all hazardous waste sites. Investigations are to be completed by 2005. All past practices are to be cleaned up by 2018. Single shell tanks are to close by 2018 but some of the double shell tanks would still be used to store waste that would then go into grout. 30 years in the future is a goal but it is difficult to predict 30 years into the future.

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Washington State is the lead agency for active hazardous waste management activities because the federal RCRA program is a delegated program and the state is charged with implementation. (Superfund is not a delegated program.) As a consequence, the State has regulatory authority over the tanks, grout, vitrification, pretreatment plants, landfills, and many other smaller facilities around the site as well as waste streams and receiving sites. EPA is the lead agency for investigation of past practice sites, of which there are thought to be more than 1000, 3-400 of which are sizable.

The second portion of TPA describes a dispute resolution process for addressing difficult issues, permitting processes, an investigative process, modification processes, record keeping, Energy commitments to fund required work, and overall enforceability. Hanford's TPA is the only agreement that has been recognized as enforceable by the US Dept. of Justice. For active facilities the TPA lays out:

- compliance and operational requirements (which has led to cessation of direct discharge of hazardous wastes),
- regulations concerning landfill operations that are expected to remain in perpetuity (such as the nuclear reactor cores from Navy decommissioned submarines),
- requirements for addressing single shell tanks and their leaks, and
- responsibilities for oversight of facilities under design or construction to deal with tank wastes (vitrification, grout and pretreatment).

The goal of the TPA is to bring DOE into compliance with state law and to cleanup Hanford waste sites so as not to preclude or to allow eventual release to the public of as much land as possible.

From the State's perspective, the TPA has been very effective as is shown by the cleanup budget, the cessation of discharges, and the reduction in waste volumes and the design work that has brought us to the point today where Hanford's major cleanup construction projects are close to getting underway. However, TPA is rapidly approaching a critical point as DOE is having difficulties meeting schedules and resolving technical issues in a timely fashion to show adequate progress.

270 grout vaults are planned for low-level tank wastes but Washington wants DOE to accelerate its search for alternatives because the State does not believe that 270 vaults over the long-term are acceptable. The decontamination and decommission program is expected to receive substantially increased focus in coming years when facilities are considered waste and come under TPA.

EPA's Role in Regulating Past Practices

DOE, which is the lead agency for the site, carries out the cleanup; Ecology and EPA play a regulatory role. EPA's area of emphasis is past practices while the State's is active hazardous waste management sites.

The typical Superfund process in the Hanford context can be stifling and the TPA parties have worked to develop a quicker and less expensive process. Unless the process gets moving, there is a risk that the \$1 billion a year for the cleanup may slow down.

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Operable units are groupings of waste sites. By dividing the site into these units, priorities can be set to deal with the worst sites first.

Estimated dates for cleanup decisions were shown in a viewgraph. There are not yet approved workplans for many of these units but are close to approval. The first 4 are approved and underway. Many others are expected in 1995.

Hanford Remedial Action (HRA) EIS

The scope of the HRA EIS fits between the Programmatic EIS which looks at facilities nationwide and decisions through the CERCLA process which look at the operable unit level. The purpose of the HRA EIS is to evaluate a range of approaches for environmental restoration and remedial action. Site uses developed by the Working Group will provide the endpoints that the cleanup is trying to achieve. The EIS team needs from the Working Group a range of reasonable alternatives/scenarios that can be converted into alternatives to be analyzed in the EIS. The EIS will then investigate technologies to support those endpoints.

Decision Making Related to the Hanford Site

Information was provided by Ron Izatt, DOE Environmental Assurance, Permits and Policy Group, Paul Kruger, DOE, and Scott Seiler, Westinghouse Hanford Company.

Energy is developing the Hanford Integrated Plan which brings together the decisions and planning documents into a central location. It was created two years ago as an overall planning process to figure out how to integrate all the various programs that are underway within the Richland office. It endeavors to integrate and cross link them and to orient them in the direction of the cleanup. It is reviewed annually. The process consists of looking at a series of documents:

- Hanford Strategic Plan lays out goals for the overall Hanford site, establishes goals by mission area and talks about values to be used to achieve those goals. It is reviewed annually.
- Hanford Mission Plan is large and substantive. It tries to understand the systems logic needed to meet the goals of a particular mission area and identifies key decisions needed to get there. The Strategic and Mission Plans are vehicles for arriving at decisions.
- Multi-Year Program Plans derive from the Mission Plan but provide greater detail.
- Fiscal Year Work Plans are similar to the Multi-Year Program Plans, but focus on a single year at a time.

The Hanford Five Year Plan, which is also an annual process, focuses on a shorter time frame than the Strategic and Mission Plans which are intended to look 15-20 years ahead or to the endstates where Energy wants to be at the end of 30 years of the cleanup. The Five Year Plan was initiated by Admiral Watkins when he became Secretary of Energy several years ago. Given the fact that there are so many unknowns related to the cleanup, Admiral Watkins felt it was better to focus on what could be accomplished in the next five to seven years. The Five Year Plan is the primary document for setting up the budget.

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The Five Year Plan takes decisions in the Strategic and Mission Plans and identifies how to achieve those goals within the shorter period. It tends to be more budget-oriented than either the Strategic or Mission Plans.

The Site Development Plan is the next level below the Strategic and Mission Plans. It takes existing decisions and factors them into the development plan for the site so that the programs on site will have the land, infrastructure (roads, rail, water, power) and services they need to accomplish their missions. The Site Development Plan reflects decisions made in the Mission and Strategic Plans. The development plan is reviewed on an annual basis and comes out in the late Spring (April-May).

National Environmental Policy Act (NEPA) Documentation

Rick Engelman, NEPA documentation manager for Westinghouse Hanford Company spoke about provisions of the National Environmental Policy Act.

There are 8 environmental impact statements (EIS's) that are upcoming that may affect the Hanford site, either pending or planned. The distinction between the two categories is whether or not Notices of Intent have been published.

Pending Environmental Statements (4):

- Headquarters' *Programmatic EIS (PEIS)* for Energy's environmental restoration/waste management program. This PEIS will assess the national impacts of the Department's environmental restoration/waste management program. The Draft Implementation Plan, published in February 1992, proposes to evaluate a range of alternatives for environmental restoration activities within the DOE complex and a range of alternatives for consolidation of waste treatment and disposal facilities and activities of the complex. The Draft PEIS should be published late this year, with the Final to be issued a year later.
- Headquarters' *Nuclear Weapons Complex Reconfiguration EIS*, also known as the Reconfiguration EIS or the Complex 21 EIS. It is designed to assess impacts of overall restructuring of DOE's nuclear facilities in the complex, downsizing and modernizing it. The Draft EIS should be published by the end of 1992, with the Final to be issued in July 1993.
- The *Decommissioning of eight surplus reactors* at Hanford. The draft was published 3 years ago; the final is expected in 1992. (It does not include N Reactor.)
- Dept. of Interior's *Comprehensive River Conservation Study EIS for the Hanford Reach of the Columbia River*. The process began about 3 years ago and the DEIS was issued last week.

Planned EIS's (4):

- *Supplemental EIS to the Hanford Defense Wastes EIS* will assess waste tank safety and management issues. It will also look at final disposal of cesium and strontium capsules. Current plans call for the Notice of Intent to be published this summer.
- *Hanford Remedial Action EIS*.

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- *EIS on Irradiated Fuel* stored at the Hanford Site will examine how irradiated fuel is managed at Hanford. A Notice of Intent is being reviewed at present.
- *Hanford Sitewide EIS* is planned to document overall operations and activities at Hanford for the next 5-7 years and their impacts.

Growth Management Act

Amy Tousley of the State of Washington's Department of Community Development on the Growth Management Act, Phil Mees, Comprehensive Planner for Benton County on critical areas designations and Terry Novak, professor of urban and regional planning at Eastern Washington University provided information on aspects of Washington State's Growth Management Act as they relate to recommended land uses.

In compliance with recent Growth Management legislation, Benton, Franklin and Grant Counties are currently working on classifying, designating and identifying ways to protect critical areas and resource lands. They have been told they have the authority to classify and designate critical areas and resource lands on state and federal lands which allows local governments to have something already on the books if federal or other lands are opened up for public purchase.

The other requirement they are working on is county-wide policies, which requires coordination with other local jurisdictions. Under the Growth Management Act, there are 8 areas that need to be addressed. All of these are gearing up toward the mandate for comprehensive land use plans. Urban growth areas are traditionally going to be cities and a projected growth area around the cities for the next 20 years, based on population projections and the ability to provide services to those areas. After comprehensive plans are ready, local governments will look at existing development regulations and see what needs to be fine-tuned so that the ordinances are consistent with their long-range comprehensive plans.

With respect to Hanford, the cities and counties are looking to the State Office of Financial Management to produce a list of essential public facilities (such as hazardous waste facilities, correctional facilities, group homes) to guide local governments and growth projections that are based on current economic activity. (OFM currently projects an increase of 36,000 people in the area over the next 20 years.)

25% of Benton County's lands are on the Hanford Reservation and the County expects a transition back from federal to private use. Currently the County's land use designation for Hanford is "unclassified," a designation that also applies to large areas of the County outside of the Reservation. Under GMA, the County is considering a more definitive land use plan for Hanford and wants a land use plan for the Reservation. One of the expected results of the HRA EIS mapping process will be three gross land use designations: "unrestricted," "restricted" and "exclusive" and they will reflect the residual levels of contamination on the Reservation. The County would then prescribe its own land use designations within those 3 categories, such as agricultural, industrial, public recreational, etc.

Growth management, although intended to improve local coordination, in some cases, complicates it. For example, jurisdictional questions are an issue. What happens to the

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opportunity of the county to regulate private projects on federal lands? In GMA statutes, departments of the State are instructed to follow the local city and county plans, once they are devised. It remains to be seen if the State departments will abide by this ruling. There is also a pending statute, the "Federal Facilities Compliance Act," which would make similar statements about federal facilities. However, this may prove to be "like trying to herd cats."

Two GMA statutes require cities and counties "to plan together, to designate urban growth areas and to promote contiguous and orderly development and provision of services to such development." Department of Community Development and a 3-member Urban Appeals Board are the referees. Consultations were to have begun in July, 1991 and to be completed by July 1, 1993, when urban growth boundaries are to have been drawn. If they are not completed, the Urban Appeal Board can request of the Governor fiscal sanctions against the cities and counties. Currently, Richland has a water line into the Reservation to serve the 300 Area. Energy has asked for domestic sewer service as well, and the City is doing planning now. One can assume that the City of Richland will claim the 300 Area as an urban growth area, at least out as far as the end of the urban area.

Mandates in the GMA legislation about urban growth areas and their implications for funding of services pit city governments against county governments as far as revenues from property and sales taxes are concerned, which leads to squabbles between cities and counties over urban growth boundaries and the annexations of cities. The GMA states that cities cannot annex beyond urban growth boundaries; cities, therefore, have incentives to put their boundaries as far out as possible so as not to limit themselves in the future. Counties, on the other hand, may view this as an infringement on their territory and revenue potential.

The point to understand is that the growth management provisions add another level of complexity over the EIS's and other planning efforts described earlier in the day. Hanford presents a dilemma that was unforeseen in growth management legislation: there are areas that are very rural in character interspersed with pockets that are quite urban in character.

General Services Administration Process for Release of Federal Property

Peter Hébert, Deputy Director of General Services Administration's Office of Real Estate Sales in San Francisco, provided information on the General Services Administration (GSA) process. The GSA has a process for federal agencies to use and dispose of land that they hold in conformity with federal property management regulations and GSA law. However, there is no "black and white situation;" federal property transfers can become highly political because of competing interests. GSA tries to make the process as "democratic" as possible and to make decisions for the most beneficial use of excess land.

A GSA booklet, "Disposal of Surplus Real Property," outlined the process. The process is actually a two-step process: the first step is a notification to other agencies within the federal government that a piece of property held by a federal agency is no longer needed -- this puts a piece of property in the category of "excess" property. Then, if no agency *within* the federal government wants to acquire the property, the property is declared "surplus," then becoming

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available for acquisition by a non-federal party. The entities that are given the first opportunity to express interest are state and local governments.

Public domain land does not go through GSA. The agency with custody of the land would send a request to the Bureau of Land Management for a request for relinquishment. At that time, BLM would make a determination whether it should go back into the public domain or not.

While GSA cannot currently sell or dispose of contaminated land, it was pointed out that as a result of the many military sites currently being surplused by the federal government, creative ways of transferring federal lands are being used in various parts of the country, such as leases or redefinitions of boundaries. These approaches enable uncontaminated parcels of sites, where there are also contaminated areas, to become available for non-federal uses.

Critical Species and Habitat on the Hanford Reservation

Lisa Fitzner, Washington State Department of Wildlife, presented a slide show illustrating the different types of plants and animals, especially threatened and endangered species and their habitat, found on the Hanford reservation.

Appendix D

List of Experts Who Spoke At Working Group Meetings

APPENDIX D

List of Experts Who Spoke at Working Group Meetings

MAY 14, 1992 MEETING

Native American Uses of the Hanford Area and the Treaties 1855

- *Louie Dick*, Board of Trustees, Confederated Tribes of the Umatilla Indian Reservation
- *Russell Jim*, Manager, Environmental Restoration/Waste Management, Yakima Indian Nation
- *Ralph Johnson*, Professor, University of Washington School of Law

European Settlers' Use of the Hanford Area

- *Annette Heriford*, Historian and Member of Benton County Historical Society

Federal Acquisition of the Hanford Site

- *Charles Pasternak*, Real Estate and Cultural Resources Specialist, Department of Energy

Development of Local Economy and Population

- *Michelle Gerber*, Historian, Westinghouse Hanford Company
- *Joe King*, City Manager, City of Richland
- *Dean Schau*, Economics Instructor, Columbia Basin College and Regional Economist, Washington State Employment Security Department

Contamination Primer Panel

- *Tim Connor*, Energy Research Foundation
- *Julie Erickson*, Branch Chief, Environmental Remediation, Department of Energy
- *Larry Goldstein*, CERCLA Unit Supervisor, Washington Department of Ecology
- *Todd Martin*, Staff Researcher, Hanford Education Action League
- *Doug Sherwood*, Environmental Engineer, U.S. Environmental Protection Agency
- *Don Wodrich*, Manager of Technology Integration for Tank Waste, Westinghouse Hanford Company

JUNE 25-26, 1992 MEETING

Technologies to Address Contamination

- *Paul Day*, U.S. Environmental Protection Agency
- *Arjun Makhijani*, Institute for Energy and Environmental Research

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- *Steve Stein*, Deputy General Manager, Battelle Environmental Management Operations
- *Chris Whipple*, Chair of the National Academy of Sciences Board on Radioactive Waste Management.
- *Rick Wojtasek*, Manager, Environmental Restoration Programs, Westinghouse Hanford Company
- *Rodger Woodruff*, Battelle

Panel on Key Decisions Related to the Hanford Site

- *Jim Bauer*, Environmental Assurance Permits and Policy Office, Department of Energy
- *Paul Day*, U.S. Environmental Protection Agency
- *Roger Stanley*, Manager of Nuclear Mixed Waste Program, Washington Department of Ecology
- *Steve Wisness*, Department of Energy
- *Reed Kaldor*, Advanced Sciences, Inc., Contractor for HRA-EIS

JULY 9, 1992 MEETING

Decisionmaking Related to the Hanford Site

- *Ron Izatt*, Environmental Management, Department of Energy
- *Paul Kruger*, Department of Energy
- *Scott Seiler*, Westinghouse Hanford Company

National Environmental Policy Act (NEPA) Documentation

- *Rick Engelman*, NEPA Documentation Manager, Westinghouse Hanford Company

Growth Management Act

- *Phil Mees*, Comprehensive Planner, Benton County
- *Terry Novak*, Professor of Urban and Regional Planning, Eastern Washington University
- *Amy Tousley*, Department of Community Development, State of Washington

SEPTEMBER 17, 1992 MEETING

General Services Administration Process for Release of Federal Property

- *Peter Hébert*, Deputy Director of General Services Administration's Office of Real Estate Sales , San Francisco

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OCTOBER 22-23, 1992 MEETING

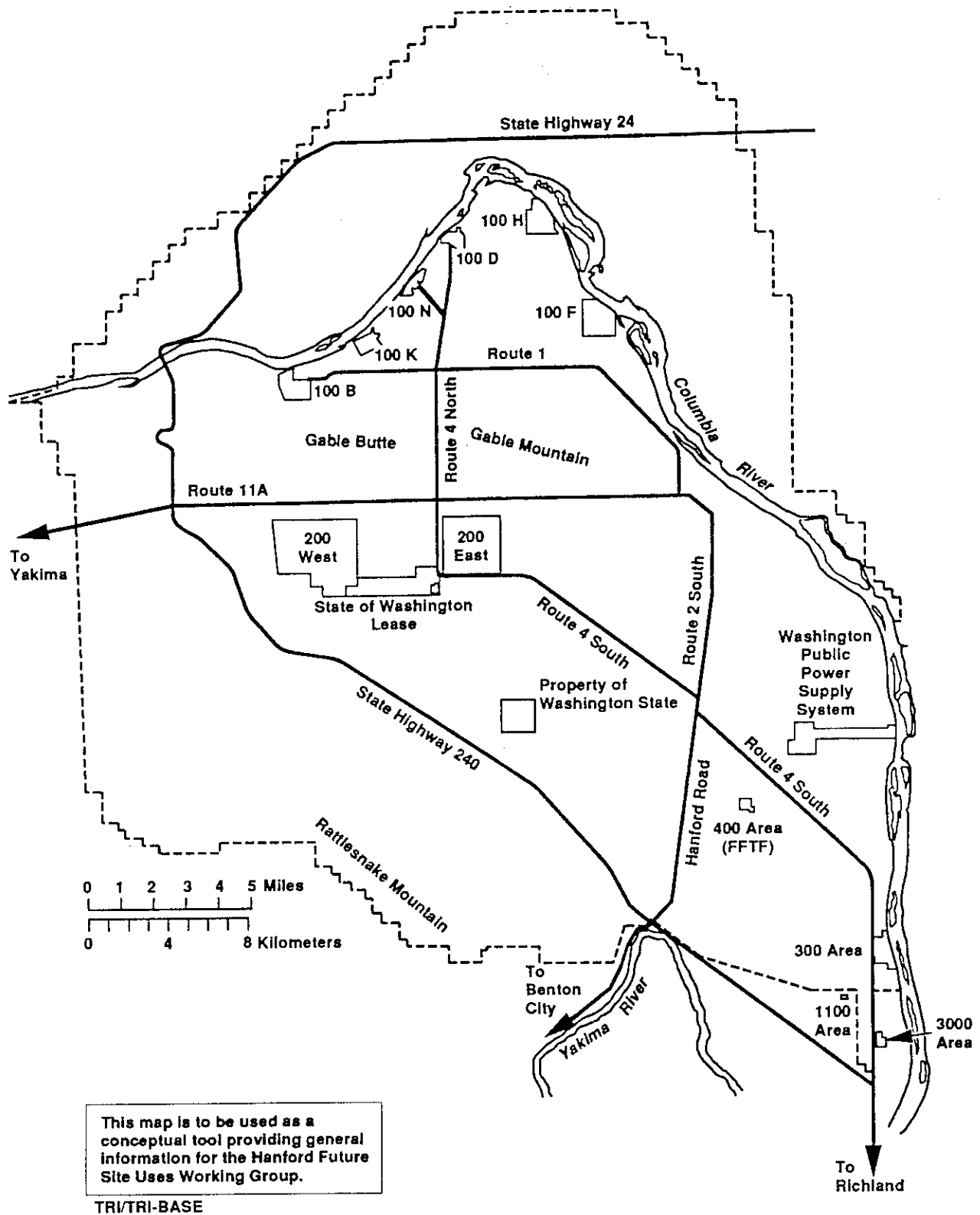
Critical Species and Habitat on the Hanford Site

- *Lisa Fitzner*, Wildlife Biologist, Washington State Department of Wildlife

Appendix E

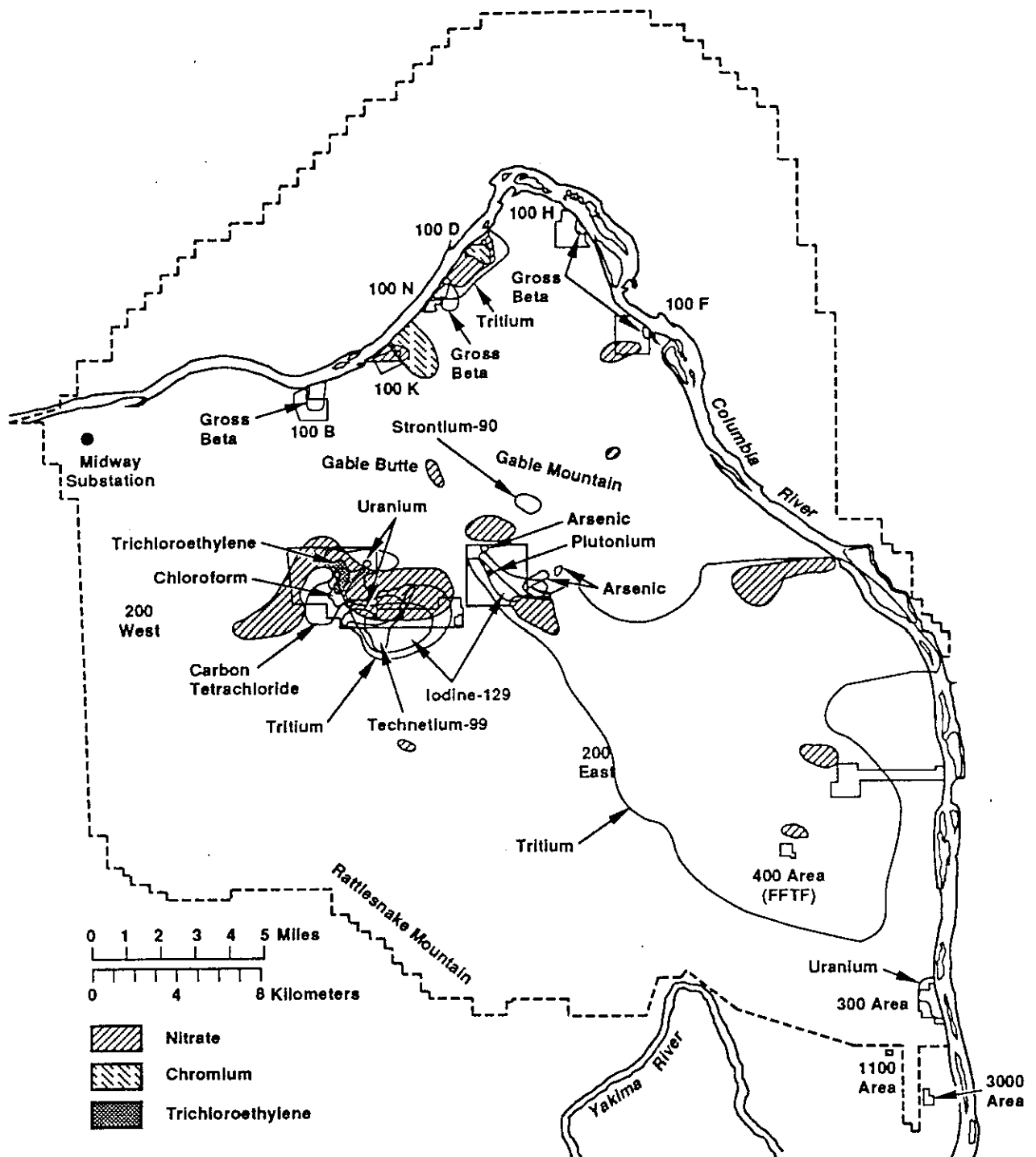
**Informational Maps Used By The Working Group
Including Maps Indicating Locations Of Known
Contamination On The Hanford Site**

Hanford Future Site Uses Working Group Basemap



Contamination, Waste Disposal and Storage: Groundwater Plumes Map

Hanford Future Site Uses Working Group



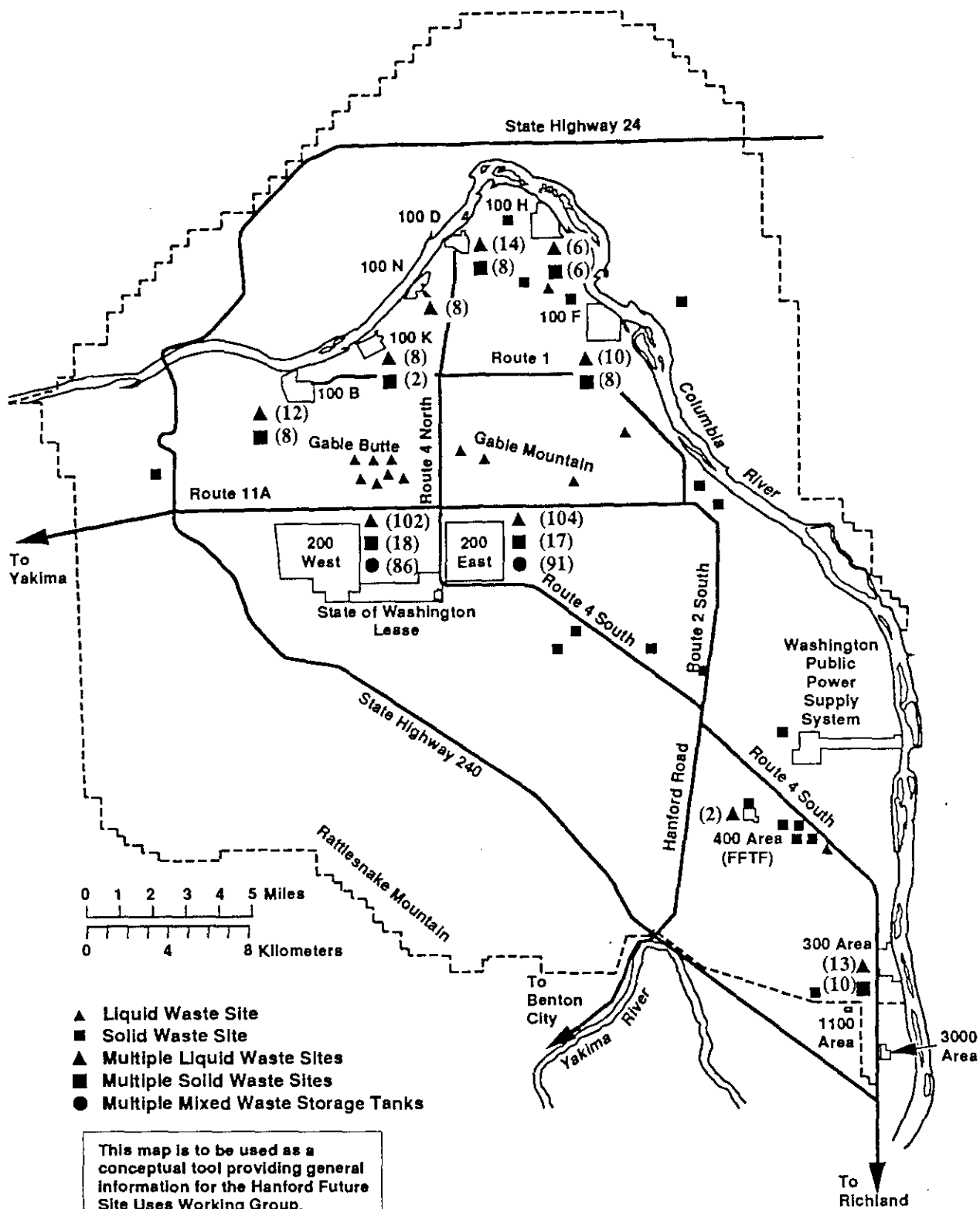
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

Note:
Current, ongoing investigations indicate the standards for chromium and tritium may be exceeded in the area between Reactors D and H along the river.

TRI/PLUMES

Contamination, Waste Disposal and Storage: Type of Waste Sites

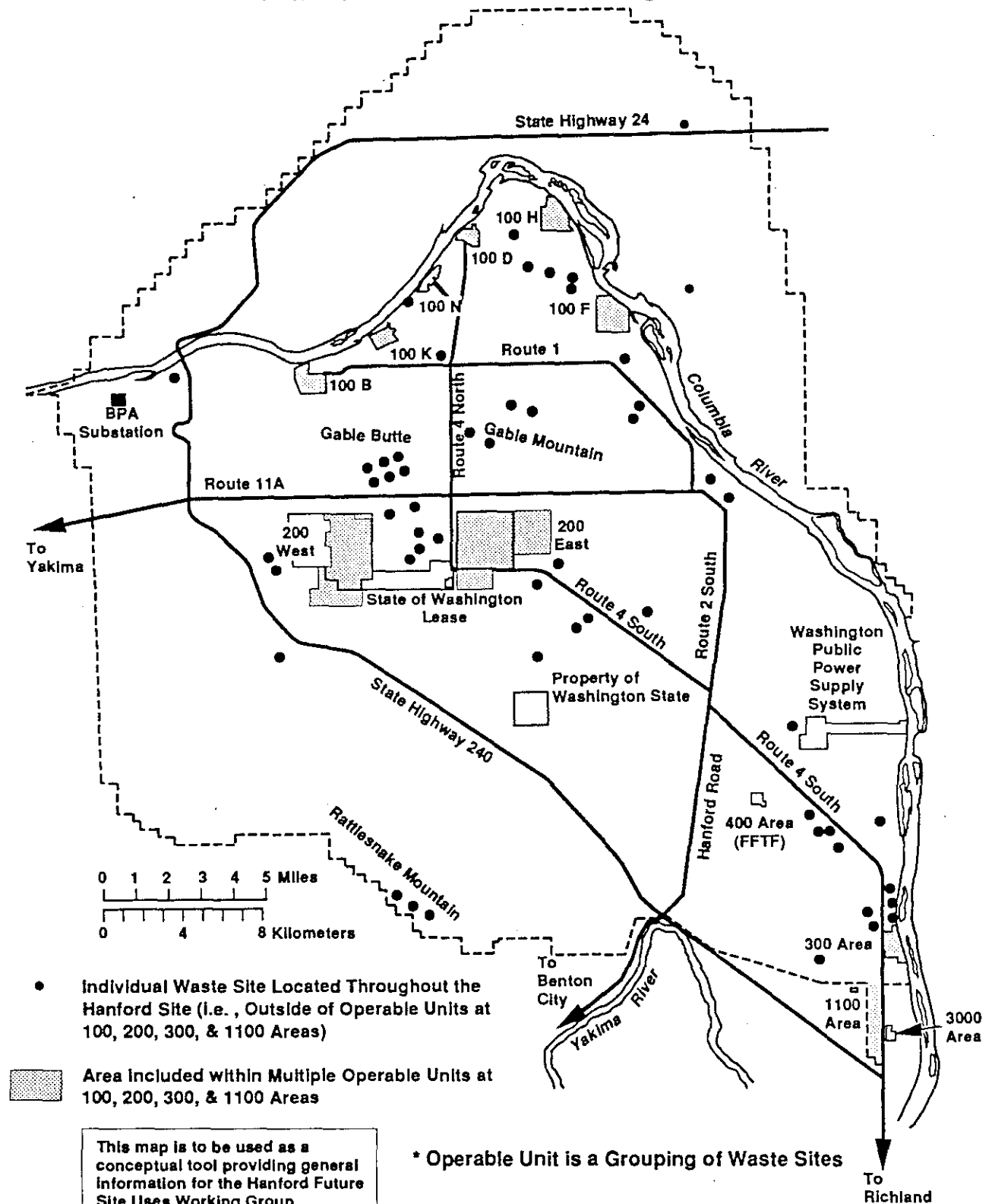
Hanford Future Site Uses Working Group



ERE/WASTESITE

Contamination, Waste Disposal and Storage Map: *Operable Units and Waste Sites

Hanford Future Site Uses Working Group



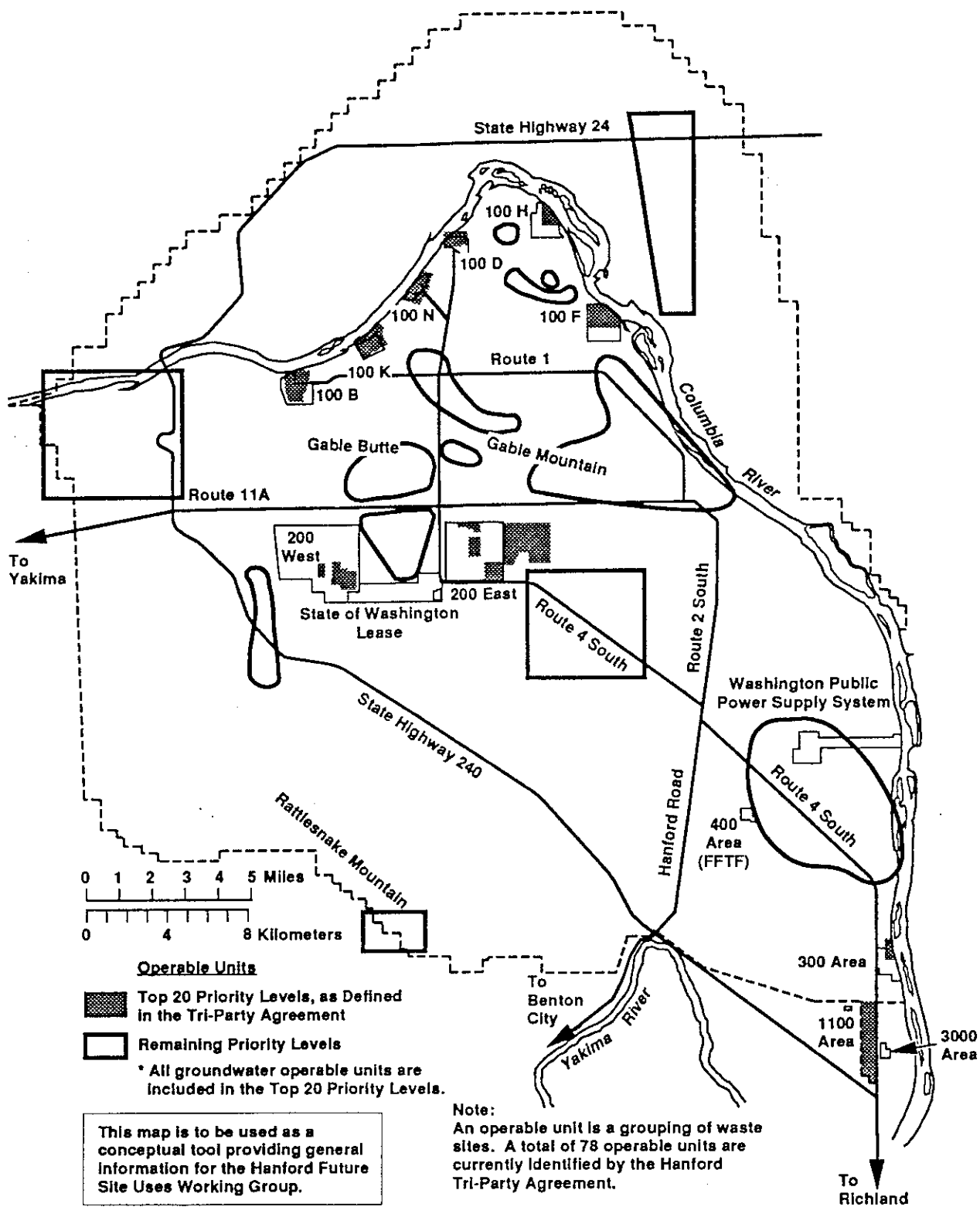
This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/OPERUNIT

* Operable Unit is a Grouping of Waste Sites

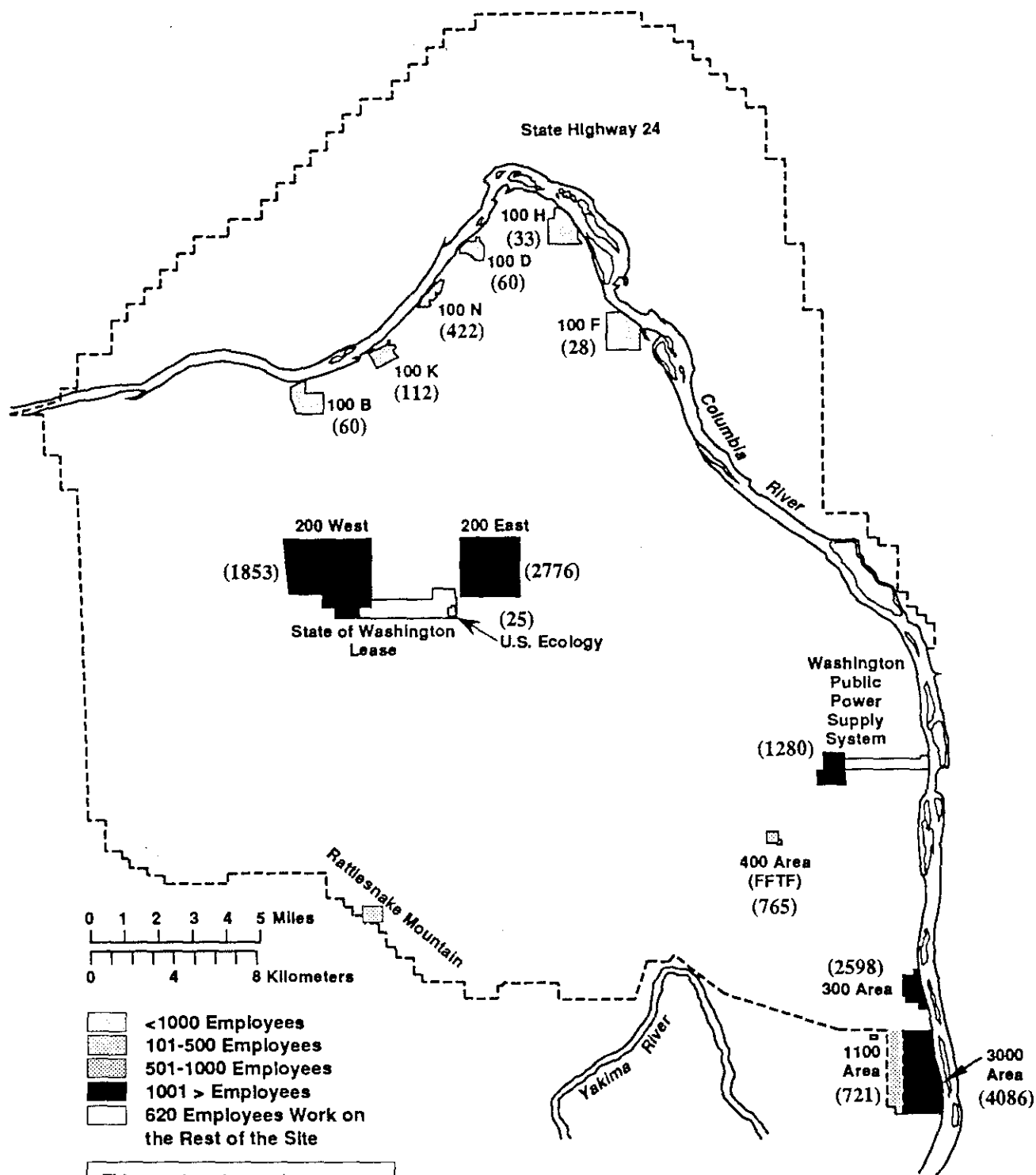
Contamination, Waste Disposal and Storage Map: Tri-Party Agreement Priorities

Hanford Future Site Uses Working Group



Economic Considerations and Contributions: Employment Map

Hanford Future Site Uses Working Group

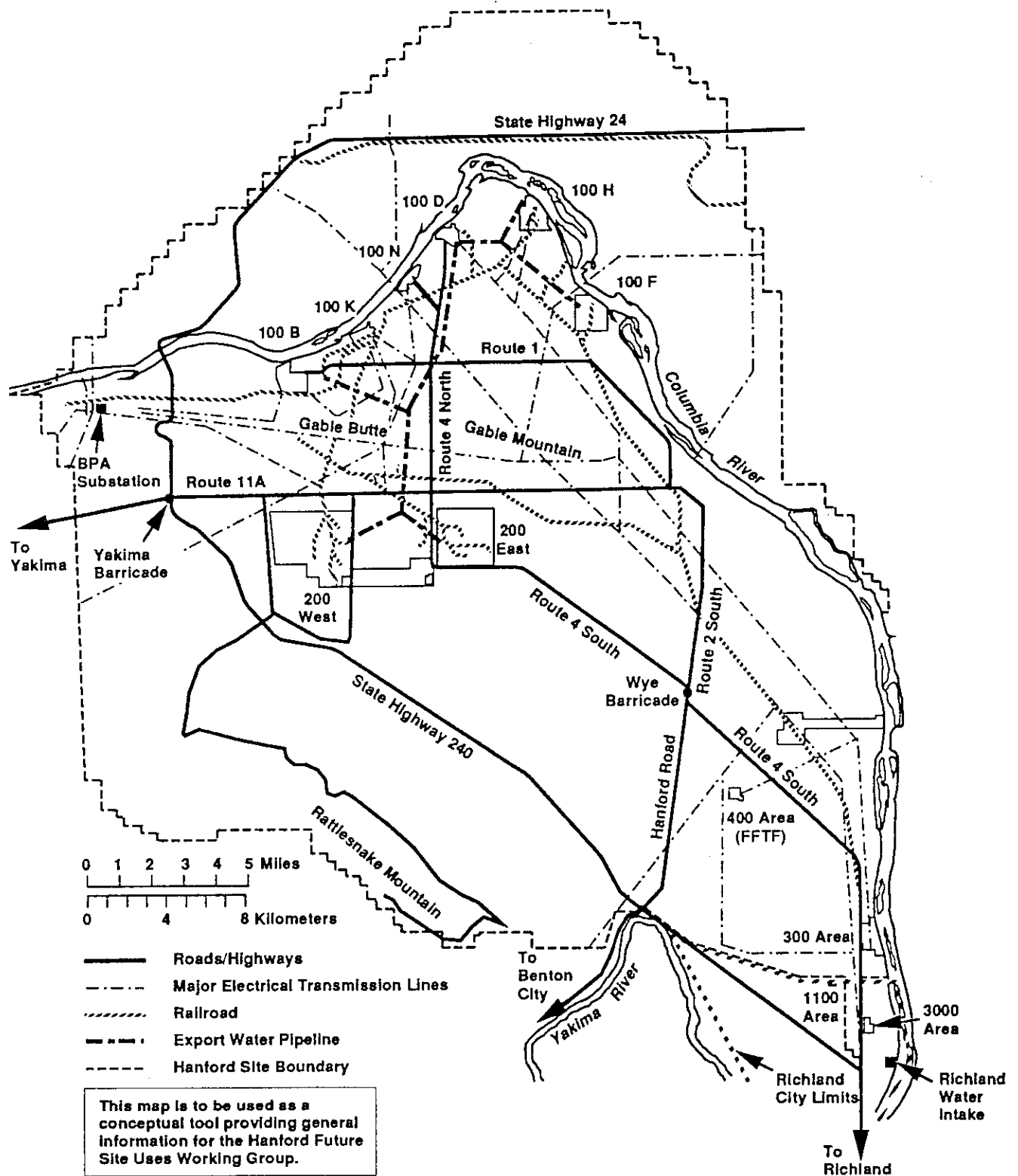


This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

ERE/EMPLOYEE

Economic Considerations and Contributions: Infrastructure Map

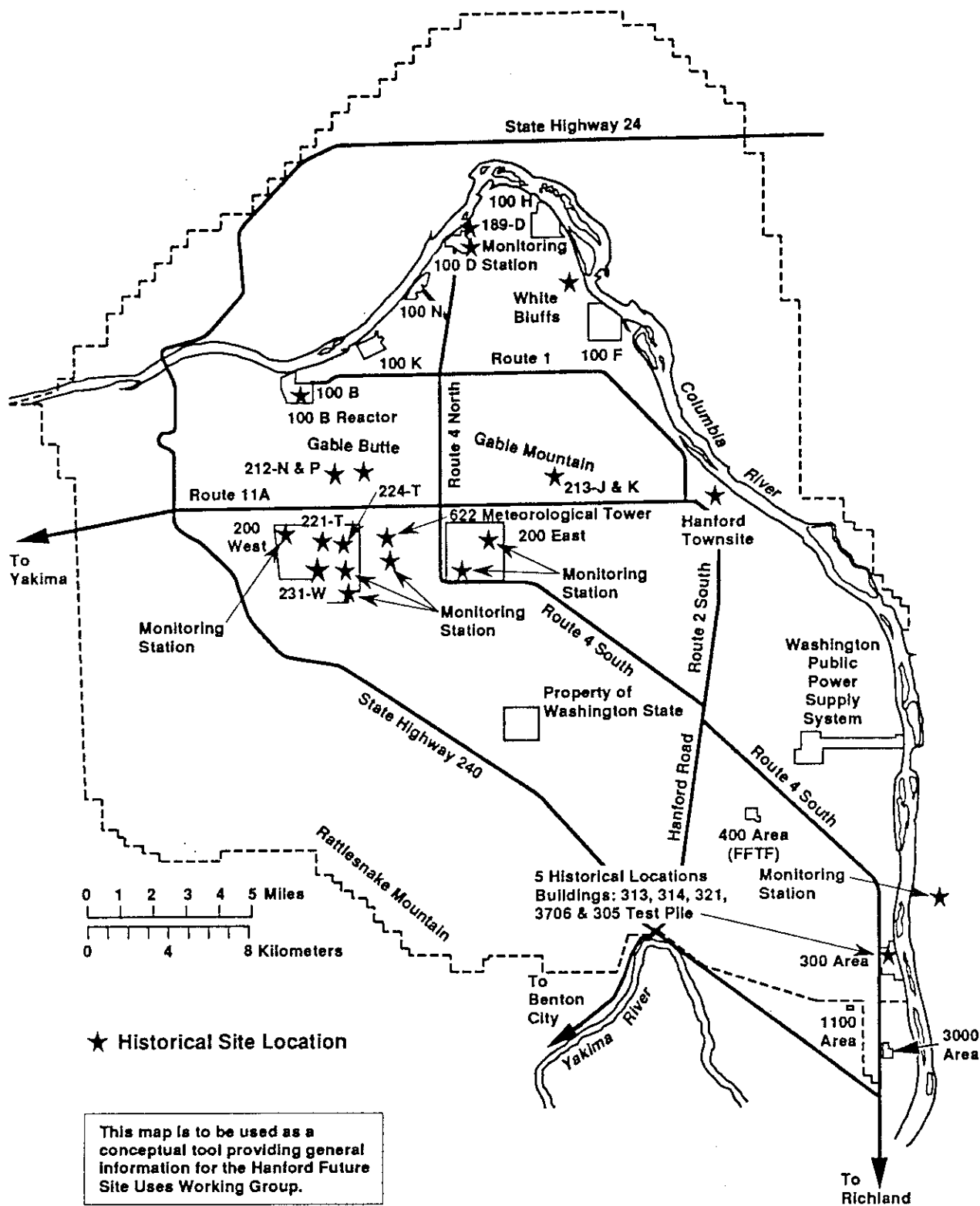
Hanford Future Site Uses Working Group



TRI/TRI-BASE

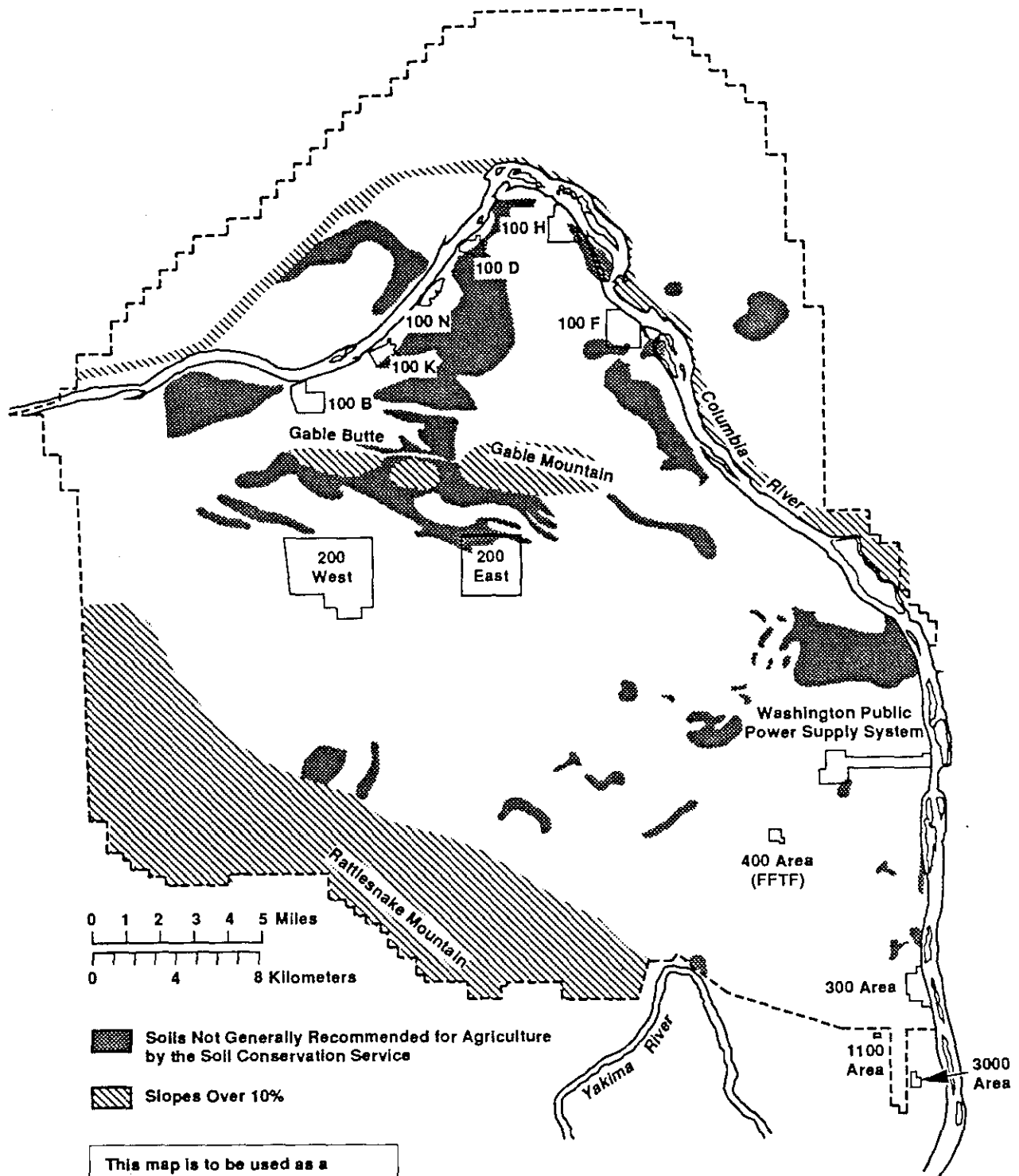
Cultural Aspects: Historical Sites and Uses Map

Hanford Future Site Uses Working Group



Natural Features: Arable Lands Map

Hanford Future Site Uses Working Group

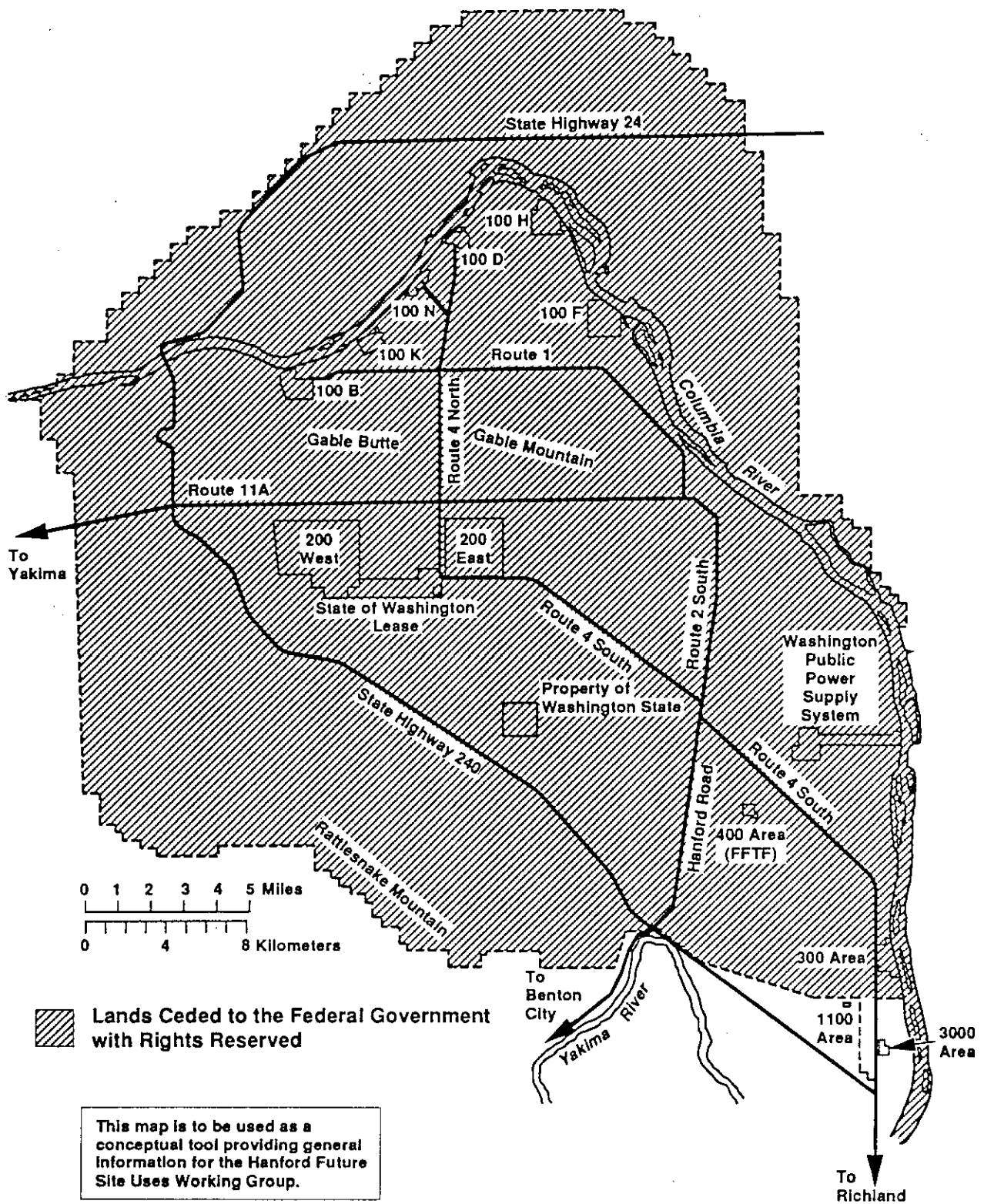


This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

TR/ARABLE

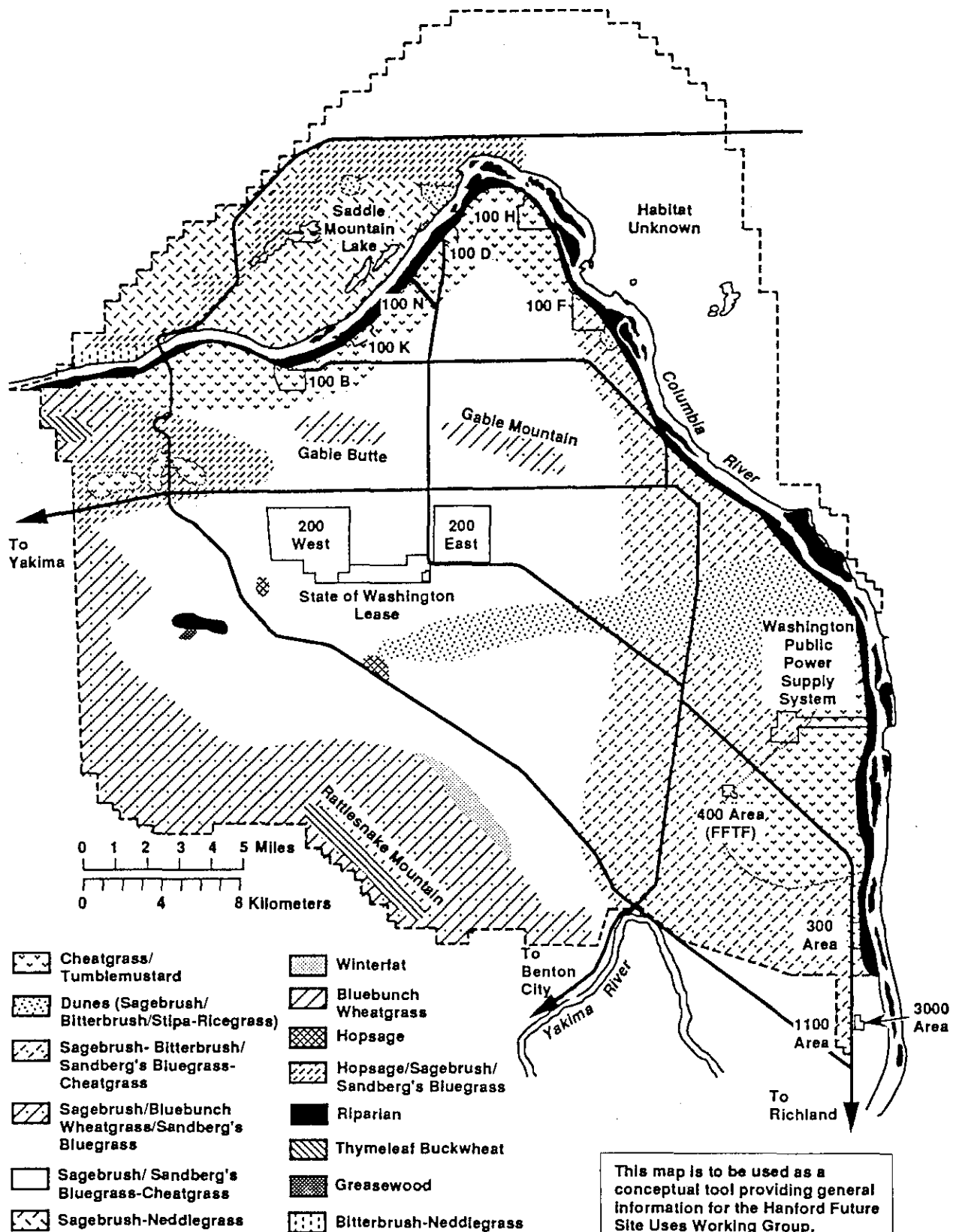
Cultural Aspects: Native Uses and Sites Map

Hanford Future Site Uses Working Group



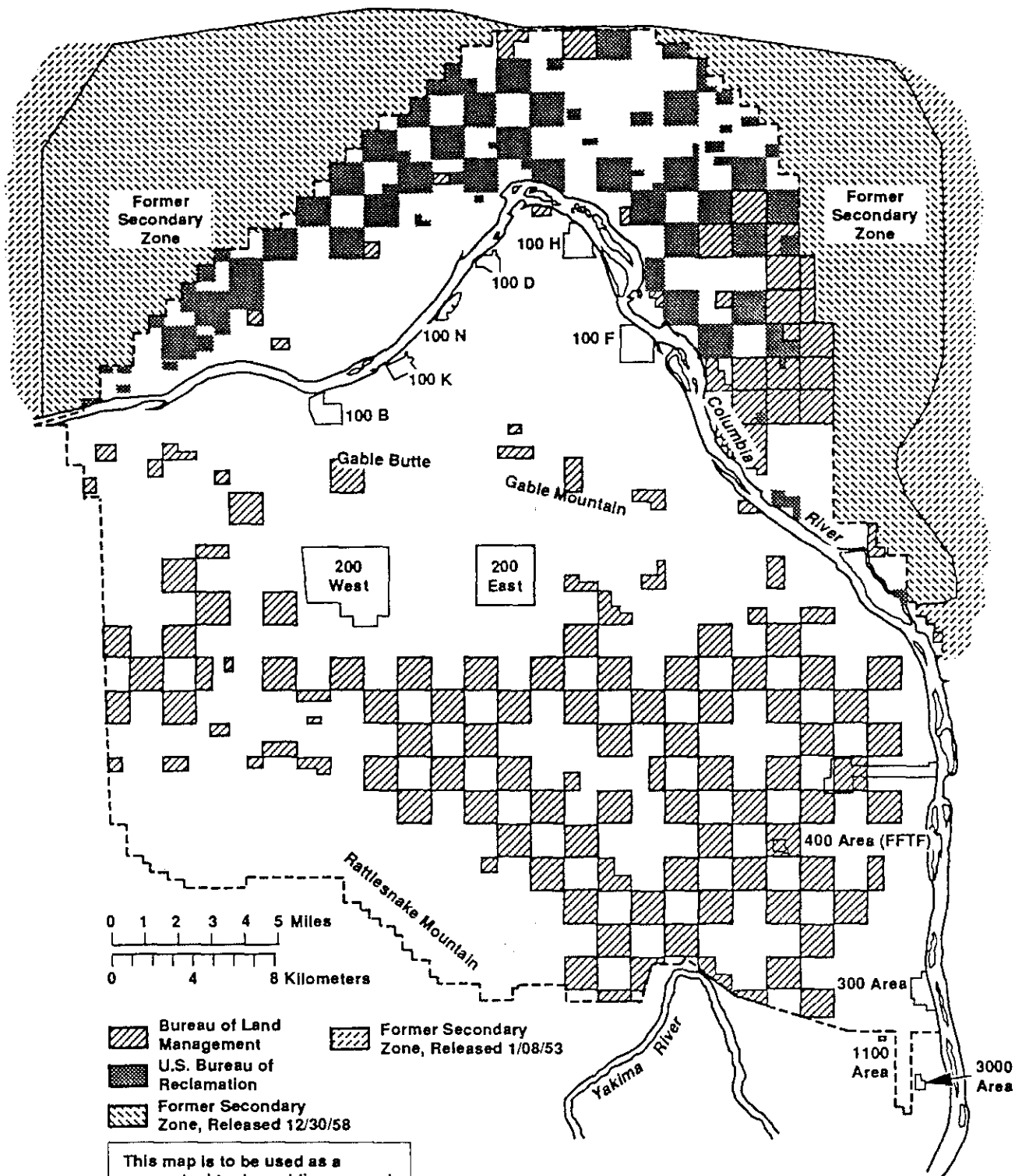
Natural Features: Habitat Map

Hanford Future Site Uses Working Group



Land Uses: Past Ownership Map

Hanford Future Site Uses Working Group

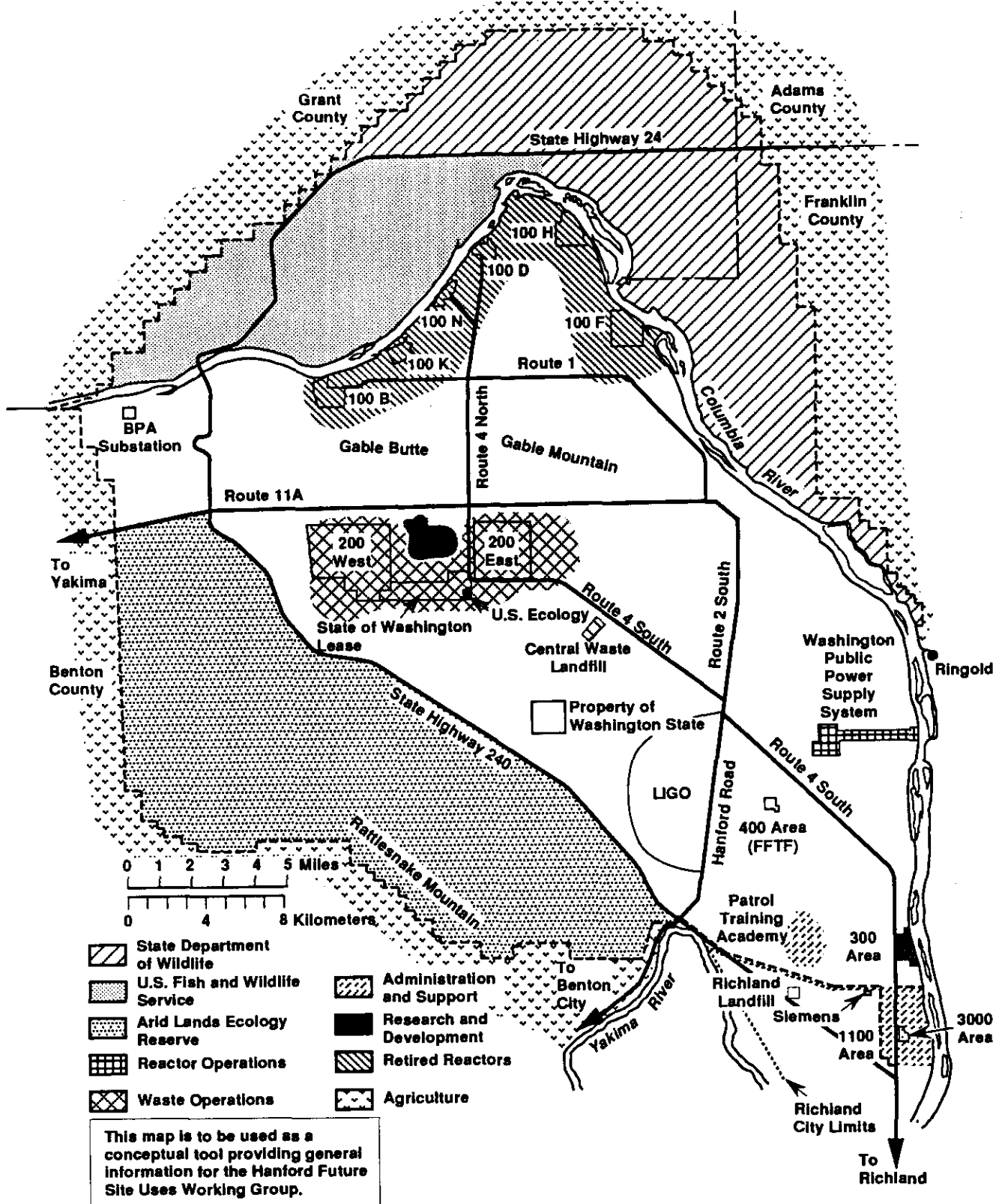


This map is to be used as a conceptual tool providing general information for the Hanford Future Site Uses Working Group.

TRI/PAST OWNER

Land Uses: Current Uses and Ownership

Hanford Future Site Uses Working Group



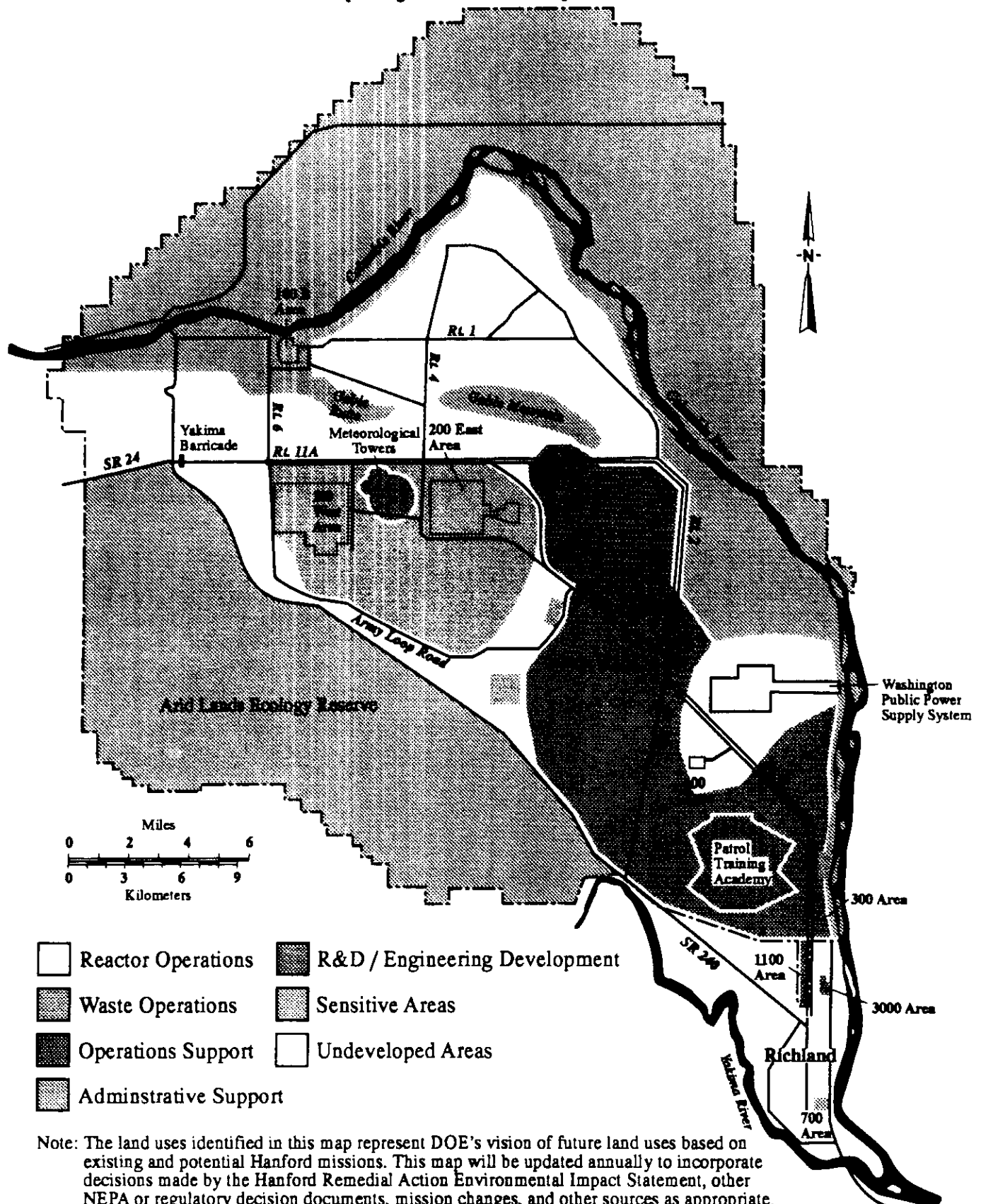
TRI/CUR-OWNER

Appendix F

DOE Proposed Future Land Uses
(Beyond 2018)

APPENDIX F

DOE Proposed Future Land Uses (Beyond 2018)



POTENTIAL FUTURE LAND USE CATEGORIES

There are seven potential future land use categories. They are based on the type of activity that may occur in that area. The potential land uses on this map represent DOE's vision of future land uses based on existing and potential Hanford missions. This map will be updated periodically to incorporate decisions made as a result of the Hanford Remedial Action Environmental Impact Statement, other National Environmental Policy Act documents, regulatory decisions, mission changes, and other sources as appropriate. The seven categories are:

Reactor Operations Area encompasses development and irradiation of nuclear fuels. The area may include fuel fabrication, fuel storage, reactor plant operation, associated electrical power production, and materials storage. It may also include support activities located directly at the operating site that are dedicated solely to that operation (i.e. maintenance, engineering, and administration.)

Waste Operations Area includes the treatment, storage, and disposal of radioactive and nonradioactive waste. The area may include waste treatment facility operations and active or inactive tank farms, burial grounds, disposal vaults, cribs, basins, landfills, ditches, and trenches. Supporting activities such as maintenance, engineering and administration may also be included.

Operations Support Area includes services provided specifically for operations which are centrally located to enhance access. Activities are primarily industrial in nature and may include maintenance, construction support, patrol and bus and rail facilities.

Administrative Support Area includes services provided for overall Hanford Site activities, including general purpose and administrative facilities.

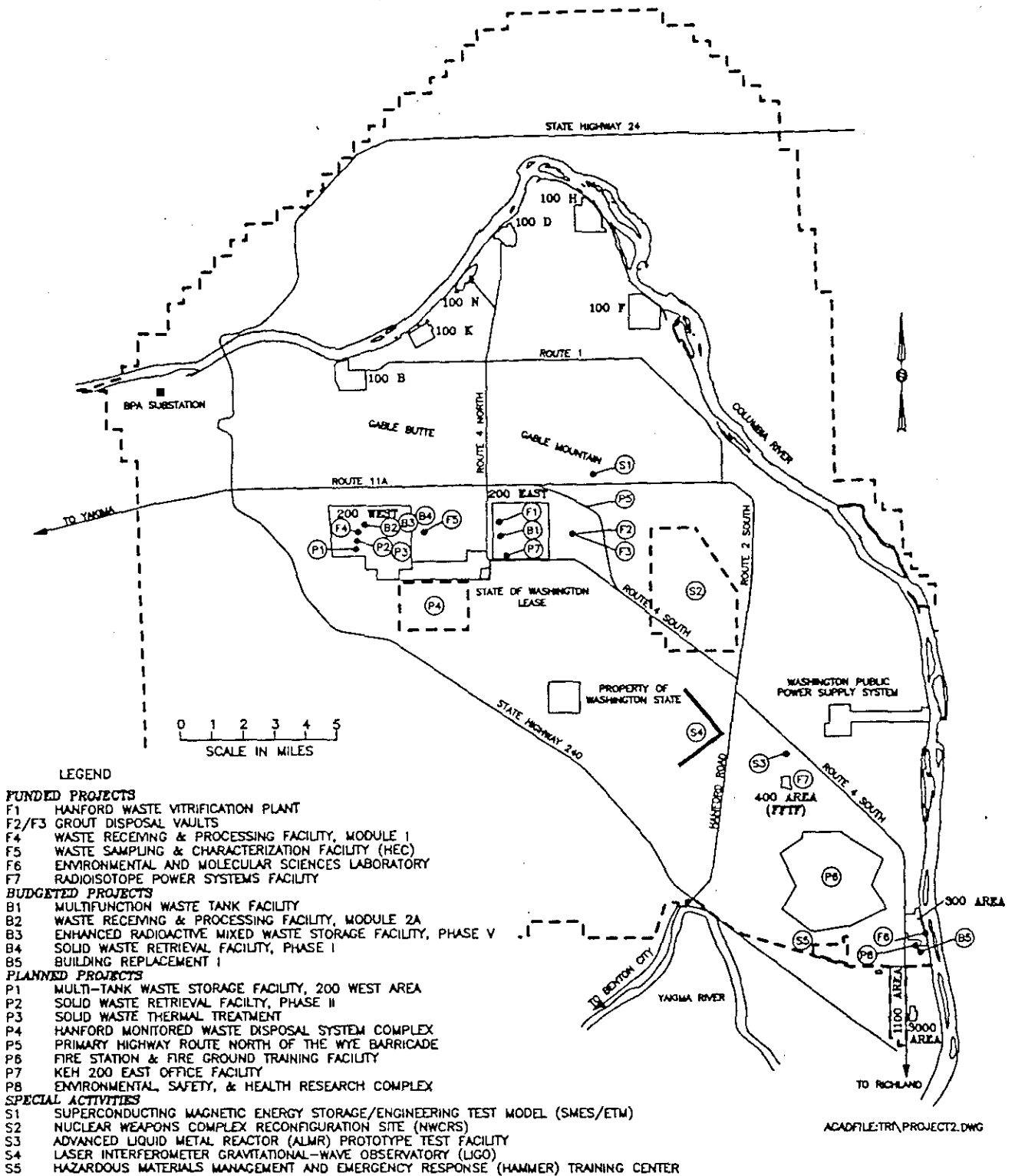
Research and Development/Engineering Development Area encompasses the development and adaptation of innovative technologies. This area may include interdisciplinary research; development of engineering solutions; laboratory analysis; computing activities; and prototype development, demonstration, and testing. Supporting activities such as maintenance, engineering and administration may also be included.

Sensitive Areas include ecologically or historically significant areas. This may include land or facilities that are environmentally sensitive, wildlife refuges, historically significant facilities, archaeologically significant areas, Native American religious sites, and ecological research areas.

Undeveloped Area includes those areas that have not been developed or have been restored to an undeveloped state.

DOE PROPOSED FUTURE USES

PROPOSED PROJECTS WITH LANDUSE IMPLICATIONS



Note: The land uses identified in this map represent DOE's vision of future land uses based on existing and potential Hanford missions. This map will be updated annually to incorporate decisions made by the Hanford Remedial Action Environmental Impact Statement, other NEPA or regulatory decision documents, mission changes, and other sources as appropriate.

Appendix G

List of Sources Information Submitted To The Working Group For Consideration

APPENDIX G

Proposals of Future Land Use Options for Hanford Submitted to the Working Group for Consideration

"Maximizing Private Development Opportunities at Hanford, October 21, 1992."
Prepared for the City of Richland by Ray K. Robinson, Inc. (RKRI) and accompanying
Memorandum prepared by Richard Harnes of the law firm, Davis Wright Tremaine,
"History of Federal Lands at the Hanford Site -- Disposal Issues." For further
information, please contact the Richland City Manager's Office, (509) 943-7381.

"The Wahhluke 2000 Plan. A Proposal for Irrigating the DOE Hanford Control Zone on
the Wahluke Slope." Prepared by the Wahluke 2000 Committee. For further
information, please contact The Wahluke 2000 Committee, P.O. Box 1986, Mattawa,
Washington, 99344.

"Hanford Environmental Restoration Park." Concept by Herbert Brady, Jr. For further
information, please write Mr. Brady, 3313 Road 92, Pasco, WA 99301.

"B Reactor as a Museum." Statement from Miles Patrick, on behalf of the B Reactor
Museum Association, to Small Work Group, August, 1992. For additional information,
please write the Association in care of P.O. Box 1531, Richland, WA 99352 or call Miles
Patrick at (509) 545-9028.

Appendix H

**Summary Of Written Comments From
Open Houses Sponsored By The Working Group
November 2-17, 1992**

APPENDIX H

HANFORD FUTURE SITE USES WORKING GROUP

Open Houses, November 2 - 17, 1992 Summary of Written Comments

The Hanford Future Site Uses Working Group sponsored a series of eight public Open Houses in Washington and Oregon between November 2 and November 17, 1992. The Open Houses began at 5:00 PM and concluded at 9:00 PM, except for the November 9 Open House in The Dalles, which ran from 5:30 PM - 7:00 PM. The following table indicates the dates and locations of the Open Houses, as well as the number of citizens who signed in and who filled in comment sheets.

Day, Date	Locations	Signed in	Comment Sheets Returned
Monday, November 2	Richland, Tower Inn	80	39
Wednesday, November	Seattle, Red Lion	19	9
Thursday, November 5	Portland, Jantzen Beach Red Lion	12	4
Monday, November 9	The Dalles, Shilo Inn	49	8
Tuesday, November 10	Mission, Oregon: Yellow Hawk Clinic	7	1
Thursday, November 12	Pasco, PUD Auditorium	31	16
Monday, November 16	Toppenish, WA, Yakima Cultural Center	8	4
Tuesday, November 17	Mattawa, WA, Elementary School	25	25

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The purpose of the Open Houses was for Working Group members to offer interested citizens an opportunity to learn about their process and the range of future use options and cleanup scenarios they had developed for Hanford. They wanted citizens to review that work and to offer comments while the Group's report was in the draft stage.

At the Open Houses, citizens took a "tour" through six geographic area into which the Group divided the site for its deliberations. There was a "station" for each area which had maps and informational displays with information about the history and unique features of the areas as well as about the extent and location of existing contamination. At each geographic area there was also information about the future use options and cleanup scenarios proposed by members of the Working Group. Each meeting participant was given an opportunity to offer written comments about the Group's work.

A summary of written comments from the Open Houses follows. Key themes that were offered at the Open Houses as a whole are followed by summaries of written comments from the individual Open Houses.

KEY THEMES

FUTURE USE OPTIONS

The written comments addressed many specific concerns and offered numerous suggestions about Hanford's future. Most discussion focused on the land use options contained in the presentation materials. The public's comments generally confirmed the range of future use options and cleanup scenarios identified by the Working Group. They also raised some issues not specifically addressed by the Working Group. These included the level of technical expertise, short-range vs. long-range planning, compatible use between adjacent areas, and the timing and appropriateness of land release. Many respondents were also concerned with the relationship between specific use designations, cleanup technologies, feasibility of attainment, and the resulting costs relative to the expected benefits. Many of the comments were astute and thoughtful.

Site Specific

Arid Lands Ecology Reserve

Suggestions to

- Restrict the Reserve to non-irrigable lands on Rattlesnake Mountain
- Define the Reserve as the area between Rattlesnake and the highway
- Make the entire area a wildlife refuge
- Tie in ALE with BIA wildlife mitigation efforts and cultural uses
- Limit public access to protect the ecology

Concerns about

- Windmills being destructive to the ecology of Rattlesnake Mountain

APPENDIX H

Central Plateau (200 Area)

Suggestions to

- Consider EIS results for the Central Plateau before any buffer to that zone is released for other purposes
- Isolate the area
- Release portions of the area for private waste management or environmental research

Support for

- The Working Group belief that the 200 area will never be completely clean
- Eventually turning the area into a new population and business center

Opposition to

- Using the area only for waste treatment and storage, since this might preclude eventual use as a new commercial and residential center

Hanford Reach

Support for

- Making the area a Wild and Scenic River corridor
- Making the area a National Wildlife Refuge
- Option 1, wildlife and recreation

Suggestion to

- Protect all river shores with a 1/4 mile buffer zone on either side, and to enforce seasonal, wildlife-related, use and noise restrictions on motorboats
- Use a consensus process involving all affected parties to decide the fate of the Reach

Opposition to

- Commercial fishing
- Use of term "free-flowing" to define the Hanford Reach because dams upriver control the flow

North of the Columbia

Belief that

- The area should be restored to its historical status as largely privately owned, agricultural land
- The recent history of livestock grazing has eliminated the original shrub-steppe ecology of the area

Suggestion that

- The South Columbia Irrigation District be fully consulted about existing facilities within this area
- Land should be returned to former owners or their descendants
- Maps of North of River should show the Wahluke Branch Canal

Support for

- Option 2, "wildlife and recreation"
- Agricultural use as proposed in Wahluke 2000 (split use between agriculture, wildlife, Native American uses, and an interpretive center)

Opposition to

- Expanded agricultural use

APPENDIX H

100 Area

Suggestions to

- Keep the 100B reactor and transform it into a museum
- Isolate the reactors and clean them up

All Other Areas:

Suggestions to

- Limit development to near the 300 area
- Develop areas north and west of the 300 area for residential use
- Develop the corridor between the 200 area and Richland for projects similar to LIGO

Support for

- The proposed wildlife option
- Increase the production of nuclear power
- Continuing the operation of the FFTF
- Irrigated agriculture north of Gable Mountain and south of the 200 Areas

Site Wide

Industrial

Support for

- Fostering industrial development in commercial fuel reprocessing, fuel fabrication, and power generation
- Developing "clean industry," such as alternative energy projects
- Developing industrial and commercial sites for private businesses
- Expanding storage capacity and acceptance of out-of-state nuclear waste
- Expanding research into effective storage and disposal of hazardous and nuclear waste
- Creating medical and scientific research facilities to study remediation and medical uses of radioactivity

Concerns about

- Appropriateness - better sites may be located elsewhere in the state
- Future generation of hazardous and nuclear waste

Agricultural

Interest in

- High potential agricultural value and quality of land in the study area

Concerns about

- Excess of agricultural land that already exists in the state
- Damage of irrigation run-off to the Columbia River
- Unknown future effects of irrigation on the site
- Accelerated flushing of contaminants into the river
- Public fears about contamination of agricultural products

APPENDIX H

Ecological

Support for

- Mapping all ranked, endangered, threatened and special species, as well as all natural communities on the site
- Protecting undisturbed and threatened species and plant communities on the site
- Designating most of the study area as a wildlife and habitat preserve
- Conducting field research in preserved areas

Concerns about

- Lack of knowledge of the extent of groundwater contamination

Suggestions to

- Quantify all water uses prior to adopting an agreed-upon usage plan
- Limit public access to the site to protect the ecology
- Carefully plan the number and location of public nature trails to avoid adverse impact on wildlife

Opposition to

- Any Native American uses which are destructive, e.g. grazing

Other

Support for

- Balanced use
- Returning land and infrastructure to the private sector as soon as possible
- Designating open space for sport fishing, wildlife, and agriculture
- Providing adequate public access to the site
- Native American use of the land within the parameters of their religious beliefs and within the guidelines of controlling agencies, such as the Washington Department of Wildlife
- Support for preserving the entire site to allow comprehensive study of the numerous and important archaeological sites

Interest in

- Definition of usage categories
- Detailed knowledge of relationship between cleanup criteria and land use categories

Suggestions to

- Take a long-range view of at least 100 years be taken when considering eventual use and cleanup options, especially regarding the 200 Area
- Discourage local annexation of lands without final state approval of plans and ordinances
- Use the site for an extensive, multi-security level, prison facility
- Build a museum encompassing frontier and Native American history of the region
- Build a museum/memorial to the W.W.II war effort and those who sacrificed to support it
- Conduct scenic river tours on stern wheelers based in the Tri-Cities

APPENDIX H

CLEANUP OPTIONS

Written comments reflected two main concerns: protecting the Columbia River and addressing the cost/benefit implications of land use decisions. Many expressed concern about the lack of knowledge regarding groundwater contamination and about increased leaching of radioactive contaminants into the Columbia if irrigation were allowed near the river. It was also felt the planners needed to consider the relationship between specific land use designations and the related cost and feasibility of cleanup activities required to support those designations.

Site Specific

Arid Lands Ecology Reserve

Suggestion to

- Bury low level radioactive waste from other parts of the site and cover it with grasses in this area of minimal activity

Central Plateau

Suggestion to

- Consolidate waste in this area
- Contain the contaminated groundwater

Support for

- Total cleanup, to allow the possibility of eventual development of the area as a residential and industrial center

100 Area

Support for

- Cleaning up everything now, including decommissioned reactors, to avoid the increased expense of doing so later

Questions about

- The feasibility of putting contaminated soil in barrels and burying it
- Why the water plants are contaminated but the river is not

General Comments

Concerns about

- Contamination of underlying groundwater
- Public perception that the area is still contaminated even after cleanup
- Better defined cleanup standards and definitions
- Variability of cleanup requirements relative to projected land use
- Designating a reactor as an historic site

Suggestions to

- Consider the areas by their geographic boundaries, especially concerning groundwater drainage, when examining methods and degree of cleanup
- Clean up areas along the Columbia first, since they have the highest development potential
- Submit cleanup plans for review to from environmental groups such as Greenpeace

APPENDIX H

- Thoroughly test groundwater before contemplating agricultural use
- Clean up the easy areas first, while also working on the big problems

Opposition to

- Transporting waste to Nevada
- Bringing in other hazardous waste to the Hanford site
- Incineration at the Hanford site

OTHER ISSUES

Open House Process

Many comments complimented the Working Group on the scope, content, and tone of the meeting process and materials.

Requests for

- Having more information presented in the Othello area
- More information on the geology of the area north of the river
- Making presentation information available in handout form
- List of the actual decision makers
- More effective meeting publicity
- More information on what is being done to clean up the Columbia

Concern about

- Failing to adequately address soil detoxification

Compliments on

- User friendly atmosphere and displays
- Effective use of maps
- Effective identification of usage options
- Positive atmosphere
- An effective public involvement process

Working Group Process

Suggestions to

- Better use the knowledge of former residents of the area
- Include former residents in the Working Group
- Clarify the Committee member selection process
- Develop both short-term and long-term development plans
- Focus more on cleanup rather on future use planning
- Have the DOE conduct a broad risk analysis to evaluate clean-up activities, taking into consideration economics, radiation dosages to workers and the public, probability of success, and costs-benefits

Concerns about

- Letting pre-conceived notions bias and limit options explored by the committee
- Lack of Working Group technical expertise
- Poorly defined usage categories
- Compatibility of adjacent use areas
- Information being withheld from the Working Group and/or the general public

APPENDIX H

Questions about

- Obtaining better knowledge about cleanup criteria and use categories
- Influence and legal authority of the CERCLA process on clean-up and land-use policies

Funding

Suggestions to

- Examine the relative costs and benefits and relative cleanup standards for residential, wildlife, commercial, and agricultural usage categories
- Allocate funds for enhancement of habitat in addition to just cleanup
- Minimize cleanup due to lack of funds and cost-effectiveness
- Fund high cleanup costs from Defense Department funds
- Perform cleanup at a high standard, regardless of cost

Opposition to

- Spending public funds on industrial or agricultural development

Concern about

- Wasting money on unproved technologies

Release of Hanford Land

Support for

- Giving priority to original land-owners
- Giving land to Native Americans
- Restoring the entire area to its pre-nuclear era status
- Returning as much of the tax base as possible to the counties, especially, the "buffer zone" in Grant, Adams, and Franklin counties

Opposition to

- Returning property to the private sector

Concern about

- Possible grievances or legal rights of former landowners

Question about

- Whether returning land use to Native Americans would allow restricted or unrestricted use

APPENDIX H

COMMENT SHEET SUMMARY

Richland Tower Inn

Monday, November 2, 1992

Sign-ins: 80

Comment Sheets: 39

Suggested Future Use Options

Site Specific

Arid Lands Ecology Reserve:

- Suggestion to restrict the Arid Land Reserve to the non-irrigable lands on Rattlesnake Mountain
- Suggestion to designate the Arid Land Reserve as the area between Rattlesnake and the highway
- Concern that windmills would be destructive to the ecology of Rattlesnake Mountain

Central Plateau (200 Area):

- Support for the Working Group belief that the 200 area will never be completely clean
- Suggestion that the results of the EIS for the Central Plateau must be considered before any buffer to that zone is released for other purposes

100 Area:

- Suggestion to keep the 100B reactor and transform it into a museum

All Other Areas:

- Suggestion that development be limited to near the 300 area
- Suggestion that "other areas" north and west of 300 area should be considered for residential areas due to their proximity to work areas and the Columbia and Yakima rivers
- Suggestion that the corridor between the 200 area and Richland be developed as an area for more things like LIGO
- Suggestion that Hanford be used as a location for more, not less, nuclear energy production to reduce dependency on the Columbia River for power generation
- Suggestion that the FFTF is a very valuable facility whose continued operation should be supported

General Comments

Industrial:

- Support for continuing nuclear research at the site
- Suggestion that information about potential industrial sites and available infrastructure be widely publicized to foster commercial use of the area
- Suggestion that there are other sites better suited than Hanford for research facilities or industrial development

APPENDIX H

Agricultural:

- Suggestion that there's an excess of agricultural land and no need to convert any of the study area to agricultural use
- Suggestion that all non-contaminated, irrigable land should be used for agricultural purposes, due to the excellent soils, climate, and economic potential
- Concern that irrigation would flush contaminated soil into the river faster than leaving the soil non-irrigated
- Concern about downstream effects of increased agricultural use of the area
- Concern that public fears of contamination could hinder marketing of agricultural products produced in the Hanford area or even state-wide
- Concern that the impact of irrigated agriculture is too much of an unknown to be allowed at this time

Ecological:

- Suggestion that research entities such as Battelle and WSU use preservation areas for valuable field research
- Suggestion to keep most of the study area as a wildlife/ecological preserve

Other:

- Suggestion that any decisions for future development should wait for 20-25 years
- Suggestion to develop a suitable mechanism to return land and infrastructure directly to the private sector as soon as possible
- Suggestion to balance usage of the area between wildlife, industrial, and agricultural use
- Suggestion to make limited areas available to Native Americans for ceremonial purposes
- Suggestion that our lack of knowledge of the extent of groundwater contamination should preclude any development at all
- Suggestion to build a museum that would encompass the histories of both Native Americans and early settlers
- Suggestion that scenic river tours be conducted on stern wheelers based in the Tri-Cities
- Support for rights of Native Americans
- Conviction that it will take years for the public to feel that the Hanford area is safe for anything
- Support for preserving the entire site to allow comprehensive study of the numerous and important archaeological sites

Suggested Cleanup Options

Site Specific

Arid Lands Ecology Reserve:

- Suggestion that low level radioactive waste be buried and covered with grasses in the area of least activity - the ALE area

APPENDIX H

100 Area:

- Suggestion that everything should be cleaned up now, rather than leaving decommissioned reactors in the 100 area that will only have to be cleaned up at a later time at more expense
- Question as to why the water plants in the 100 area are said to be contaminated, but that the same river water is OK to use downstream for human consumption
- Question if the amount of contaminated soil in the 100 area is small enough to be put in barrels and buried

General Comments

- Suggestion that cleanup be done with minimum impact to the ecology of the area
- Concern that suitable, reasonable, and appropriate cleanup standards must still be better defined before rational decisions can be made
- Concern that we are spending entirely too much time and money cleaning up areas that do not warrant such attention

Other Issues

Comments related to the Open House process:

- Suggestion that the information on the charts be made available in handout form
- Suggestion that the Introduction Display identify who the actual decision makers are
- Compliment regarding the tour escorts and user friendly atmosphere of the meetings
- Compliment that the Working Group has done a thorough job of identifying the range of options to be considered
- Compliment on doing a good job of educating the public
- Compliment on the job the committee is doing
- Compliment on the widespread usage of maps

Comments related to the Working Group process:

- Suggestion that knowledgeable former residents of Hanford and White Bluffs would be very helpful in assessing agricultural potential of land in the study area
- Suggestion that people who used to live in the study area be represented on the Working Group
- Question as to how the members of the Committee were selected
- Suggestion that both short-term and long-term development plans be created for the area
- Concern that pre-conceived notions, such as "everything is contaminated" may be biasing the breadth and scope of options being examined by the committee
- Concern whether there is enough technical expertise in the Working Group regarding such topics as radioactivity and ground water migration
- Concern that integrating usage categories between adjacent zones may be difficult
- Concern that usage categories, such as "joint", "alternate", or "mixed" must be more clearly defined for all areas
- Request for more detailed knowledge of what guidelines were used for cleanup criteria in developing the use categories.

APPENDIX H

Comments related to funding:

- Suggestion that the relative cost and potential benefits of meeting divergent cleanup standards for residential, wildlife, commercial, and agricultural land categories should be examined
- Suggestion that absolutely no public funds be spent in assisting industrial or agricultural development

Comments related to release of Hanford Land:

- Suggestion that if land is sold for agricultural use, former owners should get the first chance to purchase it
- Concern about possible grievances and/or legal rights of the former owners of the land
- Question of what returning the land to Native Americans would entail and if their usage of the land would be unrestricted or confined to traditional subsistence activities

Other comments:

- Suggestion that all Health Instrument Group site survey section reports be reviewed both from the pre 1948 period and the later periods
- Suggestion to build a memorial dedicated to those who gave up their land for the war effort

COMMENT SHEET SUMMARY

Sea-Tac Red Lion

Seattle, Washington

Wednesday, November 4, 1992

Sign-ins: 19

Comment sheets: 9

Suggested Future Use Options

Site Specific

Arid Lands Ecology Reserve:

Suggestion to make the Arid Lands Reserve into a wildlife refuge

Hanford Reach:

Suggestion to designate the Hanford Reach as a Wild & Scenic River

All Other Areas:

Suggestion to generate nuclear power and tie in with the WPPSS network

APPENDIX H

General Comments

Industrial:

- Suggestion that facilities for storage of radioactive, mixed, and hazardous waste should be expanded
- Suggestion that additional, non-compact states should be allowed to ship waste to the site with medium to large surcharges
- Suggestion to expand technological studies of hazardous waste storage and disposal
- Suggestion to consider alternative energy projects such as solar and wind-generated power
- Suggestion to provide industrial and commercial sites
- Suggestion to create medical and scientific research facilities to study remediation and medical uses of radioactivity
- Concern that industrial uses might produce additional contaminants

Agricultural:

- Concern about how to remedy the current problem of agricultural run-off and siltation in the Columbia

Other:

- Suggestion that open space be designated for sport fishing, wildlife, and agriculture
- Concern that adequate public access be provided

Suggested Cleanup Options

Site Specific

Central Plateau (200 Area):

- Suggestion to consolidate waste in the 200 Area and to contain contaminated groundwater

General Comments

- Suggestion that waste should not be transported to Nevada
- Concern regarding the safety of designating a reactor as an historic site

Other Issues

Comments related to the Open House process:

- Concern that meetings should be better publicized
- Compliments about the materials presented at the meetings and the good, positive job done by the Working Group

Comments related to the Working Group process:

- Concern that all information about Hanford is not being provided to the public and to policy planners

APPENDIX H

- Concern about Native American legal rights
- Belief that the CERCLA process will have more influence and legal authority in determining clean-up and land-use policies than the EIS, local governments, and public input

Comments related to funding:

- Suggestion that money be spent on enhancement of the Columbia rather than just on cleanup
- Concern that money not be wasted on unproved technologies
- Suggestion that we should put fences around contaminated areas and leave them alone, due to the unduly high cost of cleanup

Other comments:

- Suggestion to build a Cold War monument in Tri-Cities, to be called Pandora's Box
- Suggestion that the name of the Hanford "Bombers" be changed to the Hanford "Remediators"

COMMENT SHEET SUMMARY

Jantzen Beach Red Lion Inn

Portland, Oregon

Thursday, November 5, 1992

Sign-ins: 12

Comment Sheets 4

Suggested Cleanup Options

General Comments

- Suggestion that areas along the Columbia be cleaned up first, since they have the most potential for development
- Strong suggestion that contaminated areas must be cleaned up before anything else is done

Other Issues

Comments related to the Open House process:

- Compliment on good presentation with just the right amount of detail
- Compliment on the presentation being a very positive contribution

APPENDIX H

COMMENT SHEET SUMMARY

Shilo Inn

The Dalles, Oregon

Monday, November 9, 1992

Sign-ins: 49

Comment Sheets 8

Suggested Future Use Options

Site Specific

Hanford Reach:

- Suggestion that protection of this area be given top priority

General Comments

Industrial:

- Suggestion to emphasize "clean industry" such as alternative energy

Agricultural:

- Concern that current agricultural practices are more polluting to the water table and river than Hanford is
- Suggestion that agricultural use not be allowed along the river

Ecological:

- Suggestion to map all ranked, endangered, threatened and special species and natural communities on the site
- Support for site plans that protect threatened species and plant communities

Other:

- Strong skepticism that any recreational, agricultural or social use of the site area is possible due to contamination

Suggested Cleanup Options

General Comments

- Suggestion that all contaminants should be completely stopped from entering the Columbia River
- Strong opposition to bringing in other hazardous waste to the Hanford site
- Strong opposition to incineration
- Suggestion that cleanup plans be subject to review by environmental groups such as Greenpeace
- Strong concern that groundwater be thoroughly tested before contemplating agricultural use

APPENDIX H

Other Issues

Comments related to the Open House process:

- Request for more information on what is being done to clean up the river
- Request for more complete presentation; observation that two listed report options, nuclear landfill and incineration, were not discussed in the presentation
- Concern that soil detoxification was not adequately addressed

Comments related to the Working Group process:

- Request to focus time and resources on cleanup rather than on future use planning

Comments related to funding:

- Suggestion that cleanup should be performed at a high standard regardless of cost
- Suggestion that high cleanup costs should be funded from Defense Department funds

Comments related to release of Hanford Land:

- Suggestion that, where possible, unused lands be passed on to the Indian nations
- Suggestion that the entire area be restored to its pre-nuclear era status

COMMENT SHEET SUMMARY

Yellow Hawk Clinic

Mission, Oregon

Tuesday, November 10, 1992

Sign-ins: 7

Comment Sheets 1

Suggested Future Use Options

Site Specific

Arid Lands Ecology Reserve:

- Suggestion to tie in ALE with BIA wildlife mitigation efforts and cultural uses

Central Plateau (200 Area):

- Suggestion to isolate it

Hanford Reach:

- Suggestion to add Wild & Scenic corridor on both sides of the river, including all "hydric" soils

100 Area:

- Suggestion to isolate the reactors and clean them up

APPENDIX H

Other:

- Suggestion that all water uses be quantified prior to adoption of an agreed upon usage plan
- Suggestion that local governments be discouraged from annexing lands without final state approval of plans and ordinances

COMMENT SHEET SUMMARY

PUD Auditorium

Pasco, Washington

Thursday, November 12, 1992

Sign-ins: 31

Comment Sheets 16

Suggested Future Use Options

Site Specific

Arid Lands Ecology Reserve:

- Support to retain the ALE Reserve as a Wildlife Reserve
- Opposition to wind energy turbines on Rattlesnake Mt.
- Suggestion that public access be limited

North of the Columbia:

- Support for Option 2, supporting wildlife and recreation
- Opposition to any expanded agricultural use

Central Plateau (200 Area):

- Suggestion to release portions of this area for private waste management or environmental research
- Support for eventually turning this area into a new population and business center
- Opposition to using this area only for waste treatment and storage, since this might preclude eventual use as a new commercial and residential center

Hanford Reach:

- Suggestion to implement Option 2 of the Proposed Action, creating a National Wildlife Refuge with National Wild and Scenic River overlay
- Support for Option 1, wildlife and recreation
- Suggestion to protect all river shores with a 1/4 mile buffer zone on either side, and to enforce seasonal, wildlife-related, use and noise restrictions on motorboats

100 Area:

- Suggestion to preserve the B Reactor Area as a National Monument

APPENDIX H

All Other Areas:

- Suggestion to release portions of the 300 area, just north of Richland, for industrial development
- Support for the wildlife option
- Support for building a second WPPSS reactor

General Comments

Industrial:

- Suggestion to support development in three industrial categories: commercial fuel reprocessing, fuel fabrication, and power generation
- Suggestion to build waste management/volume reduction facilities as a permanent industry

Agricultural:

- Concern that agricultural activity in the area will raise questions in the minds of consumers about the safety of Washington agricultural products
- Suggestion to permanently exempt presently contaminated areas near or around major production facilities from agricultural development, due to the threat of increased leaching of radioactive contaminants into the water table

Ecological:

- Suggestion to limit public access to the site to protect the public from potential hazards and to prevent disturbance of studies of the flora and fauna
- Suggestion to preserve most of the site in perpetuity as a National Habitat Preserve
- Opposition to any Native American uses which are destructive, e.g. grazing
- Suggestion that any proposed public nature trails be carefully planned to avoid adverse impact on wildlife

Other:

- Support for Native American use of the land within the parameters of their religious beliefs and within the guidelines of controlling agencies, such as the Washington Department of Wildlife
- Support for returning as much of the tax base to the counties as possible
- Support for returning the "buffer zone" in Grant, Adams, and Franklin counties to its former owners and purposes
- Suggestion that a long-range view of at least 100 years be taken when considering eventual use and cleanup options, especially regarding the 200 Area

Suggested Cleanup Options

Site Specific

Arid Lands Ecology Reserve:

- Suggestion to bury low level radioactive waste from other parts of the site and cover it with grasses in this area of minimal activity

APPENDIX H

Central Plateau:

- Support for total cleanup, to allow the possibility of eventual development of the area as a residential and industrial center

General Comments

- Suggestion that the cost-effectiveness of cleanup activities will have to be considered, and that such an analysis will modify projected use options of specific areas
- Suggestion to consider the areas by their geographic boundaries, especially concerning groundwater drainage, when examining methods and degree of cleanup

Other Issues

Comments related to the Open House process:

- Suggestion to provide 8 1/2 X 11 handouts of the fact sheets presented in the display areas
- Compliment on Working Group efforts and on an effective public involvement process

Comments related to the Working Group process:

- Suggestion to have the DOE conduct a broad Risk Analysis to evaluate clean-up activities, taking into consideration economics, radiation dosages to workers and the public, probability of success, and cost-benefits

Comments related to release of Hanford Land:

- Opposition to returning property to the private sector

COMMENT SHEET SUMMARY

Yakima Cultural Center

Toppenish, Washington

Monday, November 16, 1992

Sign-ins: 8

Comment Sheets 4

Suggested Future Use Options

General Comments

Industrial:

- Support for using the site's existing infrastructure to support residential and industrial development

Agricultural:

- Opposition to any agricultural development, due to fears of leaching radioactive waste and of potential environmental scares similar to the Alar scare with apples

APPENDIX H

Ecological:

- Suggestion that the entire area be left undeveloped and preserved as wildlife habitat

Other:

Suggestion to use the site for an extensive, multi-security level, prison facility

COMMENT SHEET SUMMARY

Mattawa Elementary School

Mattawa, Washington

Tuesday, November 17, 1992

Sign-ins: 25

Comment Sheets 25

Suggested Future Use Options

Site Specific

North of the Columbia:

- Belief that this area should be restored to its historical status as largely privately owned, agricultural land
- Belief that the recent history of livestock grazing has eliminated the original shrub-steppe ecology of the area
- Suggestion that the South Columbia Irrigation District be fully consulted about existing facilities within this area
- Support for Wahluke 2000 plan - split use north of river between agriculture, wildlife, Native American use and an interpretive center

Hanford Reach:

- Opposition to making this area into a park
- Opposition to allowing commercial fishing
- Support for recreational use
- Questions about the accuracy of describing the Reach as "free-flowing" because dams upriver control the flow
- Support for using a consensus process involving all affected parties to decide on Reach that will protect the River without being economically unrealistic

General Comments

Agricultural:

- Support for returning all appropriate lands to agricultural use

APPENDIX H

Ecological:

- Support for keeping fish and wildlife land in its present state
- Support for expanding the biological study for EIS to include lands adjacent to the site in order to determine support and habitat provided to wildlife on agricultural lands

Other:

- Support for returning land or access rights to Native Americans for cultural purposes where appropriate
- Support for returning land to former owners, especially those promised the return of their lands once no longer needed as "security buffer" in the 1957 Memorandum of Agreement between the Atomic Energy Commission and the Bureau of Reclamation

Suggested Cleanup Options

General Comments

- Suggestion to clean up the easy areas first, while also working on the big problems
- Suggestion to use a series of canals to provide irrigation water for agriculture and to "push" contaminants toward the River and a series of "pump and treat wells" used to clean groundwater to industrial standards before it reaches the River

Other Issues

Comments related to the Open House process:

- Request to have more information presented in the Othello area
- Request for more information on the geology of the area north of the river
- Request to hear from a "hydro-geologist"

Comments related to release of Hanford Land:

- Suggestion to do a complete study of the land status prior to establishment of the site, and to research what compensation and implied promises were given to those who were removed, including Native Americans
- Support for returning the land to Native Americans
- Support for returning land to former owners or their descendants
- Support for selling appropriate land to farmers and transferring the rest to Fish and Wildlife Service

Other:

- Concern that the City of Othello and Adams County agencies were not informed or consulted about the Hanford Reach study
- Suggestion that maps of North of the Columbia River should show the Wahluke Branch Canal